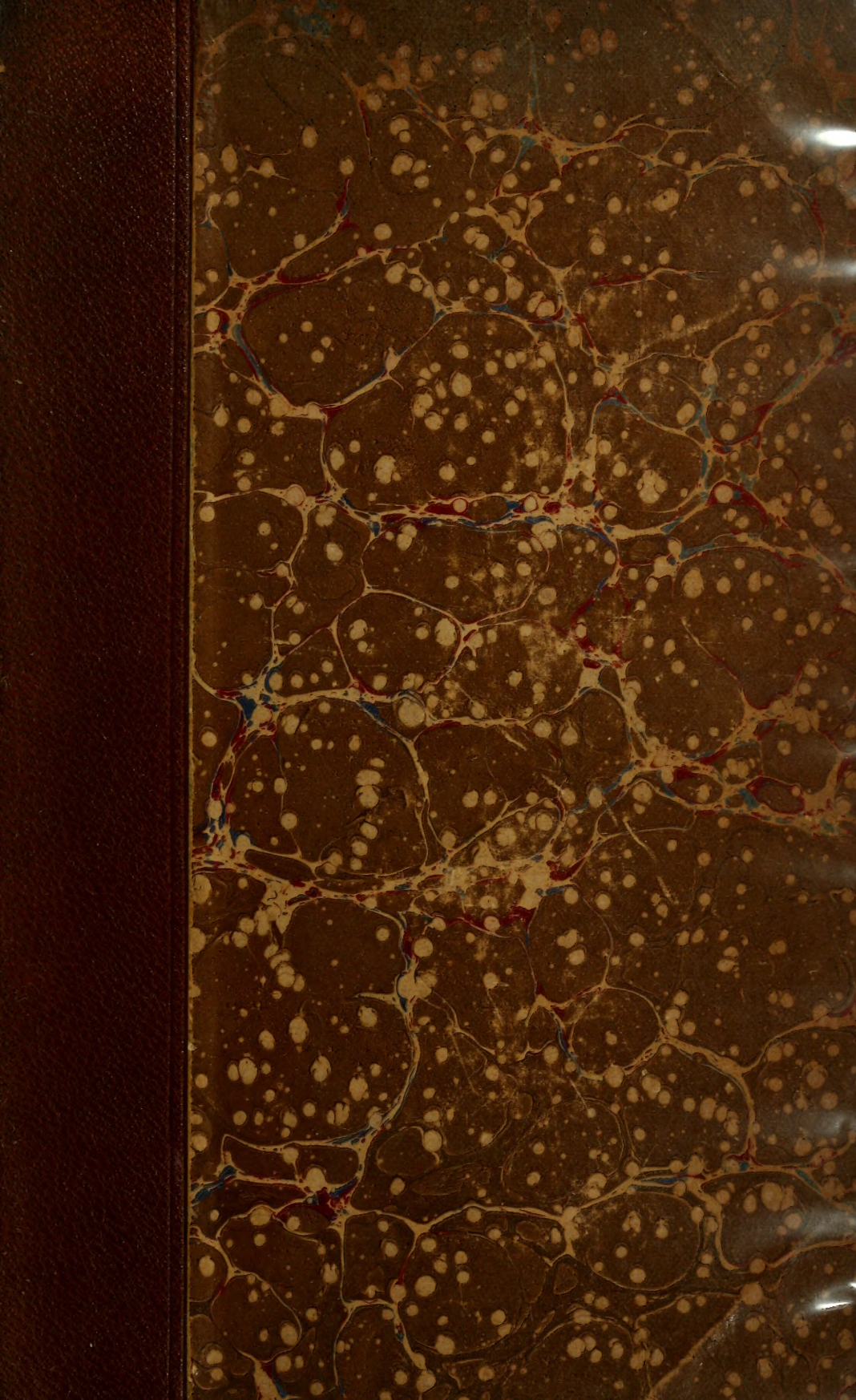
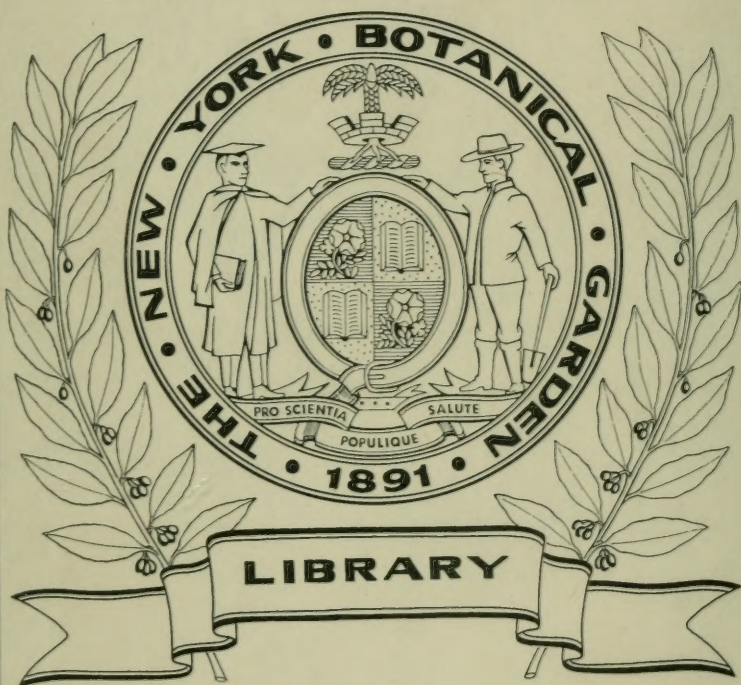




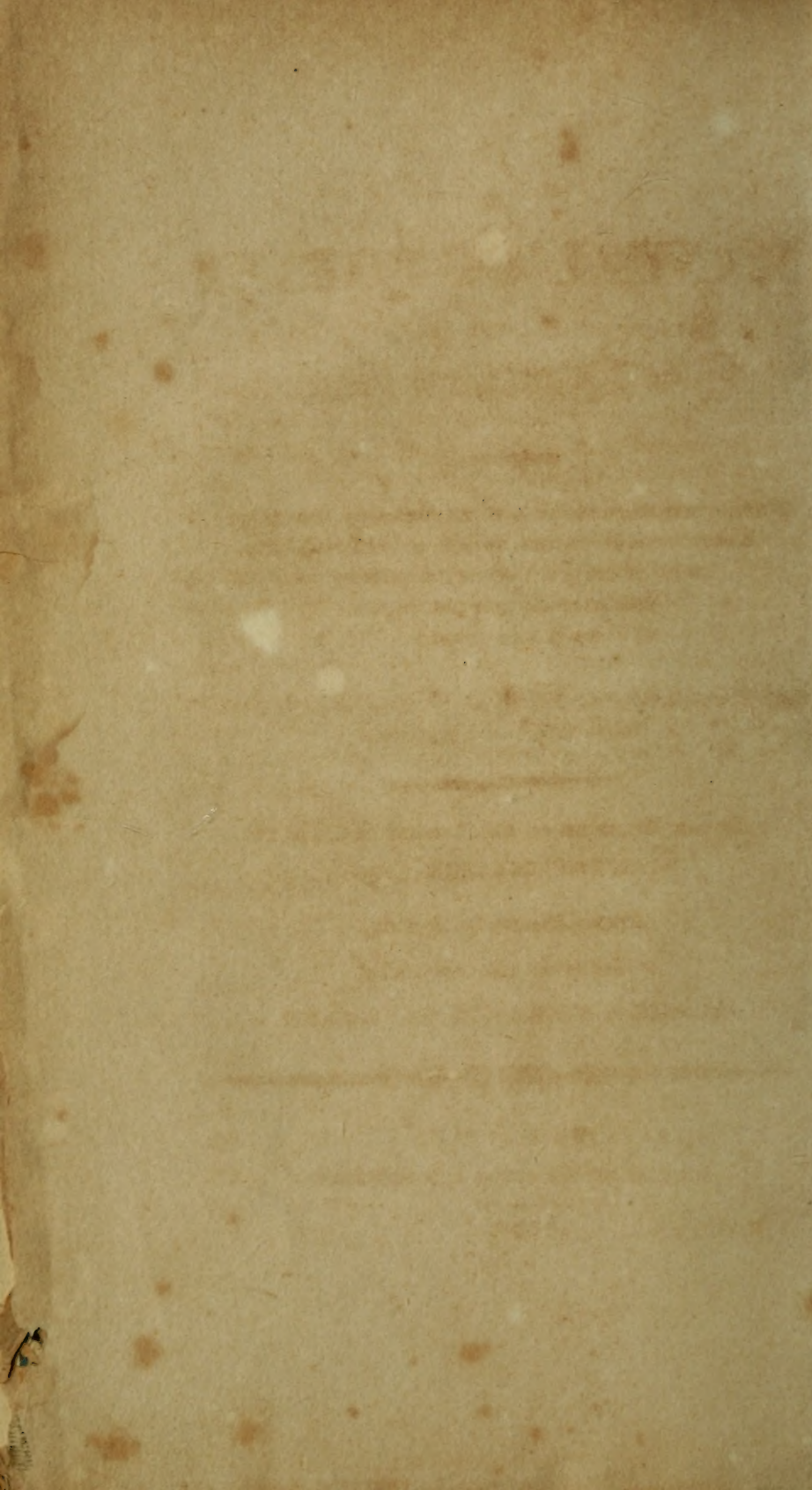
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A
MANUAL OF BOTANY
FOR
The Northern States.

COMPRISING

GENERIC DESCRIPTIONS OF ALL PHENOGAMOUS AND CRYPTO-
GAMOUS PLANTS TO THE NORTH OF VIRGINIA, HITH-
ERTO DESCRIBED; WITH REFERENCES TO
THE NATURAL ORDERS OF LIN-
NEUS AND JUSSIEU.

Each Genus is further illustrated by short Descriptions of
its most common Species.



BY THE MEMBERS OF THE BOTANICAL CLASS IN
WILLIAMS' COLLEGE, (Mass.)

From a Manuscript System,

COMPILED BY THE AUTHOR OF

RICHARD'S BOTANICAL DICTIONARY.



ALBANY:

PRINTED BY WEBSTERS AND SKINNERS.

1817.

+2K10
E12

TO THE AUTHOR

OF
RICHARD'S BOTANICAL DICTIONARY.

DEAR SIR,

WE consider ourselves happy in having an opportunity to express our gratitude for the assiduity and care, which you have manifested for our improvement in Natural Science. As the course of Lectures on Mineralogy, which you have conducted so entirely to the satisfaction of the Faculty of this College, and so much to the benefit of your class, is nearly completed, we are gratified with the prospect of attending your course of Lectures on Botany—Knowing that our improvement in that branch of Natural Science would be greatly facilitated by a systematic description of vegetables, and being destitute of such a system, we render you our thanks for the one, which you have been pleased, gratuitously, to present to us for publication.

Accept, dear Sir,

The assurances of our respect and esteem.

Williams' College, 8th April, 1817.

H. Walker Bishop,

Dorus L. Clark,

William Eastman,

Luther Hamilton,

Lyman James,

Medad Pomeroy,

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John C. Brigham,
Nelson Brown,
Elijah H. Burrit,
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Alvan Alvord,
Charles Baker,
Dwight Baldwin,
Johnson Baldwin,
Andrew Burnham,
Benjamin F. Clark,
Gardner Dorrance,
Jonathan Ely,
Simon C. Ewers,
Abner Forbes,
Mason Fussell,
William Gildersleeve,
Edward Hooker,
William W. Hunt,
Royal Joy,
William C. Kittrige,
John C. Morgan,
Isaac Oakes,
Elijah Thayer,
Alvan Wheeler.



PREFACE.

EVERY one, who has passed through the first struggles of a student in practical botany, recollects the embarrassments in which he was perpetually involved, by the multitude of foreign genera contained in the European systems.— Doctor Bigelow's Boston Flora proves the very great relief which is afforded to the student by a system of plants limited to his own particular district. But there is a middle way in this as in other things. The northern section of the United States is sufficiently contracted for this object; and the common cultivated exotics ought certainly to be included.

Another obstacle to the progress of the student is the very concise generic characters given in most of the works of this nature. If he sets out with the right class, is led to the right order, and fixes at last upon the right genus, his work is reduced to a manageable state. To guide him through those three steps is the object of this Manual. To effect this with ease to the learner, the common English names, the most striking specific characters, together with a few popular references, and the natural orders of Linneus and Jussieu, have been annexed to each generic description.

The generic characters of the phenogamous plants are translated from Persoon, and arranged principally upon his method. Additions and corrections were made, however, on comparing the translation with the systems of Linneus, Pursh, Muhlenberg, Willdenow, Bigelow, the Hortus Kewensis, the Encyclopædia, and the Synopsis of American Genera.

The descriptions of cryptogamous plants are chiefly from Sprengel, and Doctor Smith's translation of Acharius. The orders, Algae and Fungi, are mostly from Turton and Linneus.

This work should be accompanied by the Botanical Dictionary, published at New-Haven, which was translated from the French of Professor Richard; and it is so constructed that it may be bound in the same volume.

LINNEAN SYSTEM OF VEGETABLES.

All Vegetables are divided into twenty-two* CLASSES. These CLASSES are divided into ORDERS. ORDERS are divided into GENERA. GENERA are divided into SPECIES. SPECIES are frequently changed into *varieties*. Varieties, however, are more properly within the province of the Gardener, than of the Botanist; at least the method of procuring varieties.

When a Botanist sees a plant, which he never saw before, and wishes to know its name and uses; he proceeds as follows.

1. He takes the unknown flower in his hand (no unknown plant can be ascertained without the flower) and compares its parts with the description of each class, until he finds the class to which it belongs.

2. He then goes to the orders of that class and finds its order in the same way.

3. Next he goes to the genera of that order, and reads their descriptions, until he finds the genus to which it belongs.

4. At last looks over the species of that genus, until he finds the exact description of his plant.

5. Thus he finds the Apple to be CLASS 12, ORDER 5, GENUS *Pyrus*, SPECIES *Malus*.

* Linneus divided them into 24 classes. But farther discoveries, since his death, have proved the classes Polyadelphia and Polygamia to be too uncertain and variable to be any longer retained. Persoon, therefore, and other eminent Botanists, have rejected them. See these classes in the Dictionary.

LINNEAN CLASSES.

1. MONANDRIA, 1 stamen, or one sessile anther in the flower.
2. DIANDRIA, 2 stamens, or 2 sessile anthers.
3. TRIANDRIA, 3 stamens, or 3 sessile anthers.
4. TETRANDRIA, 4 stamens, or 4 sessile anthers.
5. PENTANDRIA, 5 stamens, or 5 sessile anthers.
6. HEXANDRIA, 6 stamens, or 6 sessile anthers.
7. HEPTANDRIA, 7 stamens, or 7 sessile anthers.
8. OCTANDRIA, 8 stamens, or 8 sessile anthers.
9. ENNEANDRIA, 9 stamens, or 9 sessile anthers.
10. DECANDRIA, 10 stamens, or 10 sessile anthers.
11. DODECANDRIA, 12 to 19 stamens, or sessile anthers.
12. ICOSANDRIA, about 20, or more, standing on the calyx.
13. POLYANDRIA, always 20 or more, on the receptacle.
14. DIDYNAMIA, 4 stamens, 2 of them uniformly the longest.
15. TETRADYNAMIA, 6 stamens, 4 of them uniformly the longest.
16. MONADELPHIA, stamens united by their filaments in one set, anthers remaining separate.
17. DIADELPHIA, stamens united by their filaments in two sets (sometimes in one set) flowers papilionaceous.
18. SYNGENESIA, stamens 5, united by their anthers in one set, flowers compound.
19. GYNANDRIA, stamens stand on the germ, style, or stigma, separate from the base of the calyx and corol.
20. MONOECIA, stamens and pistils in separate flowers, on the same plant.
21. DIOECIA, stamens and pistils on separate plants.
22. CRYPTOGAMIA, stamens and pistil so obscure that the plants can only be classed by natural families.

ORDERS OF EACH CLASS.

	1st.	2d.	3d.	4th.	5th.	6th.	7th.	8th.	10th.	13th	16th.
Class 1	Mon.	Dig.									
2	Mon.	Dig.	Tri.								
3	Mon.	Dig.	Tri.								
4	Mon.	Dig.		Tet.							
5	Mon.	Dig.	Tri.	Tet.	Pen.						
6	Mon.	Dig.	Tri.	Tet.		Hex.					
7	Mon.	Dig.		Tet.			Hep.				
8	Mon.	Dig.	Tri.	Tet.							
9	Mon.		Tri.			Hex.					
10	Mon.	Dig.	Tri.		Pen.						
11	Mon.	Dig.	Tri.	Tet.	Pen.						
12	Mon.				Pen.					Pol.	
13	Mon.	Dig.			Pen.					Pol.	
14	Gym.	Ang.									
15	Silic.	Siliq.									
16			Tri.		Pen.				Dec.	Pol.	
17						Hex.		Oct.	Dec.		
18	Pol. Acq.	Pol. Sup.	Pol. Frus.	Pol. Nec.	Pol. Seg.						
19	Mon.	Dia.			Pen.	Hex.					
20	Mon.	Dia.	Tri.	Tet.	Pen.	Hex.				Pol. Mon.	
21		Dia.	Tri.	Tet.	Pen.	Hex.		Oct.		Pol. Mon.	
22	Filices.	Musci.	Hepaticae.	Algae.	Lichenes Fungi.						

Note. The numbers at the head of this page are used to express the orders directly under them.

EXPLANATIONS FOR THE PRECEDING PAGE.

- Mon. Monogynia, 1 style, or 1 sessile stigma.
 Dig. Digynia, 2 styles, &c.
 Tri. Trigynia, 3 styles, &c.
 Tet. Tetragynia, 4 styles, &c.
 Pen. Pentagynia, 5 styles, &c.
 Hex. Hexagynia, 6 styles, &c.
 Hep. Heptagynia, 7 styles, &c.
 Dec. Decagynia, 10 styles, &c.
 Pol. Polygynia, more than 10 styles, &c.
 Gym. Gymnospermia, seeds naked.
 Ang. Angiospermia, seeds in capsules.
 Silic. Siliculosa, having pods whose length and breadth are nearly equal.
 Siliq. Siliquosa, having pods whose lengths are more than double their breadths.

In the 16th, 17th, 19th, 20th, 21st classes, the names and characters of preceding classes are taken for orders. In which, Mon. Monandria. Dia. Diandria. Tri. Triandria. Tet. Tetrandria. Pen. Pentandria. Hex. Hexandria. Oct. Octandria. Dec. Decandria. Pol. Polyandria. Mon. Monadelphia.

In the 18th class. 1. Pol. *Æq.* Polygamia *Æqualis*. 2. Pol. Sup. Polygamia *Superflua*. 3. Pol. Frus. Polygamia *Frustranea*. 4. Pol. Nec. Polygamia *Necessaria*. 5. Pol. Seg. Polygamia *Segregata*.

The 1st order in the 18th class is distinguished by having *all the florets* perfect. The 2d, by having those of the *disk* perfect, while those of the *ray* are pistillate. The 3d, by having those of the *disk* perfect, while those of the *ray* are neutral. The 4th, by having those of the *disk* staminate, while those of the *ray* are pistillate. The 5th, by having the *florets* all perfect, while each *floret* has a *perianth* of its own.

In the 22d class, the orders are distinguished by natural family characters. 1. *Filices*, (ferns) which bear fruit on the back of the leaves, or in which some part of the leaves seem as it were metamorphosed into a kind of fruit-bearing-spike. The appendix to this order includes the *Pteriodes*, which bear fruit on a peculiar appendage. 2. *Musci*, (mosses) which bear, on leafy stems and branches, one-celled capsules, opening at the top, where they are covered by a peculiar lid. 3. *Hepaticae*, (liverworts) which bear, on herbaceous fronds, four-celled capsules opening with four valves. 4.

Algae, (seaweeds, &c.) which bear, in an aquatic or gelatinous frond, vesiculous or filamentous fruit. 5. *Lichenes*, (lichens) which bear, on fibrous, compact or gelatinous fronds, scutellae, patellulae, peltae, thalamia, disks or pilidia, containing the fructification. 6. *Fungi*, (mushroom, &c.) which are destitute of herbage, consisting of a spungy, pulpy, leathery or woody substance, and bear fruit in a naked dilated membrane, or within the substance of the plant.

EXPLANATIONS OF THE CHARACTERS ANNEXED TO THE GENERIC DESCRIPTIONS.

The *first number* following the generic description is the number of the natural order of Linneus, to which the genus belongs; the *second number* is that of Jussieu. By referring to the natural orders of Linneus in the Botanical Dictionary, the qualities of plants may be so far ascertained, as they depend on these natural affinities.

☉ annual. ♂ biennial. ♀ perennial. ♀ woody.

p, when the corol is purple. r, red. w, white. y, yellow. g, greenish. e, exotic.

* Placed before one or more generic nouns, at the end of an order, indicates that these genera sometimes vary from the classes and orders to which they belong, and are found to possess the characters of the class and order under which their names are thus set down.



A.

SYSTEM OF GENERA

FOR THE

NORTHERN STATES.



CLASS I. MONANDRIA.

ORDER I. MONOGYNIA.

SALICORNIA. Calyx inflated, entire: corol o: seed 1, inclosed in the calyx. 12. 29—*virginica*, (samphire) branches undivided—*herbacea*, divided.



HIPPURIS. Calyx superior, obsolete, with a 2-lobed margin: corol o: seed 1: stigma simple. 15. 6.—*Vulgaris*, (maretail) leaves linear, whorled. 2.

* *Scirpus*, *Cyperus*.

ORDER II. DIGYNIA.

CALLITRICHE. Calyx inferior, 2-leaved: capsule membranaceous and margined: (flowers sometimes monoecious, and by some the calyx is called the corol.) 12. 6—*autumnalis*, (water-starwort) leaves all linear—*intermedia*, stem-leaves linear only—*verna*, flowers androgynous. ☺.

BLITUM. Calyx 3-cleft, berry-like: corol o: seed 1. 12. 29.—*capitatum*, (blite) heads alternate—*virgatum*, heads scattered. ☺. r.

CINNA. Calyx a 1-flowered glume, 2-valved: corol a 2-valved glume: seed 1. 4. 10—*arundinacea*, panicle large, many-flowered. 2.

* *Uniola*.

CLASS II. DIANDRIA:

ORDER I. MONOGYNIA.

A. Corol inferior, 1-petalled regular: border, except in *Jasminum*, 4-parted.

JASMINUM. Corol salver-form, 5 to 8—cleft: berry 2-seeded, each seed solitary, arilled. 44. 37.—*officinale*, (jasmine) leaves pinnate. h. w. e.

LIGUSTRUM. Calyx 4-toothed: corol with ovate divisions: berry 4-seeded. 44. 37—*vulgare* (prim) panicled. h. w.

SYRINGA. Corol salver-form: capsule 2-celled. 44. 37—*vulgaris*, (lilac) leaves cordate. h. p. and w. e.

B. Corol inferior, 1-petalled, irregular: fruit capsular.

UTRICULARIA. Calyx 2-leaved, equal: corol ringent, spurred: capsule 1-celled, globular. 24. 34—*vulgaris* (bladder-wort) floats with air-blisters. 24. y.

CATALPA. Corol 5-cleft: calyx 2-leaved: capsule 2-celled. 40. 45—*syringacifolia*, (catalpa tree) leaves cordate. h. w. p. y.

JUSTICIA. Calyx simple or double, 5-parted: corol ringent or nearly equal: capsule 2-celled, busting with an elastic claw: partitions transverse. 40. 36—*adhatoda*, (malabar nut) leaves lance-ovate. h. p.

GRATIOLA. Calyx 7-leaved, the 2 outer ones spreading: corol 4-cleft, 2-lipped, reversed: stamens 4; (2 of them barren) stigma 2-lipped: capsule 2-celled. 40. 40—*officinalis*, (hedge-hyssop) leaves slightly toothed. [This is the *aurea* of Muhlenberg.] ☉. y.

VERONICA. Calyx 4-parted: corol 4-cleft, lower division smaller: capsule 2-celled. 40. 35—*serpyll-*

CLASS II. ORDER II.

49

lifolia, (speedwell) racemes terminal. $\frac{1}{2}$. w. b.
Scutellata, racemes lateral. $\frac{1}{4}$. w. b.

C. Corol inferior, 1-petalled, irregular: seeds
 naked.

LYCOPUS. Calyx tubular, half 5-cleft: corol
 tubular, 4-cleft, nearly equal, 1 division emargin-
 ate: stamens distant: seeds 4, retuse. 42. 39—*eu-*
ropeus, (water-horehound) leaves below gash-
 toothed, above serrate. $\frac{1}{4}$ —*virginicus*, leaves
 equally serrate, base narrow. $\frac{1}{4}$ -w.

MONARDA. Calyx cylindric striated, 5-toothed:
 corol ringent, upper lip linear, involving the fila-
 ments. 42. 39—*didyma*, (Oswego tea) heads in
 whorls. $\frac{1}{4}$. r.—*allophylla*, (mountain mint) leaves
 acute-serrati. $\frac{1}{4}$. p.

ROSMARINUS. Corol ringent, upper lip 2-part-
 ed: filaments long, curved, simple, with a tooth.
 42. 39—*officinalis* (rosemary) leaves hairy beneath.

SALVIA. Calyx tubular, 2-lipped, underlip 2-
 toothed: corol ringent: filaments transversely af-
 fixed to a pedicel. 42. 39—*officinalis*, (sage) leaves
 crenate. $\frac{1}{4}$. b. p. e.—*urticaefolia*, leaves doubly-
 serrate. $\frac{1}{4}$. b.

COLLINSONIA. Calyx tubular, 2-lipped: corol
 unequal, underlip many-cleft, capillary: one per-
 fect seed. 40. 39—*canadensis*, (horse balm) leaves
 heart-ovate. $\frac{1}{4}$. y.

D. Corol superior.

CIRCAEA. Calyx 2-leaved: corol 2-petalled:
 capsule hispid, 2-celled, not gaping; cells 1-seed-
 ed. 48. 88—*lutetiana*, (enchanter's nightshade)
 leaves ovate, a little toothed. $\frac{1}{4}$. w.

* Cunila, Schoenus, Scirpus, Verbena.

ORDER II. DIGYNIA.

ANTHOXANTHUM. Calyx glume 2-valved, 1-

flowered: corol glume 2-valved, acuminate, awned: seed 1. 4. 10—*odoratum*, (sweet vernal grass) spiked; floret larger than awn. 24—An American variety, *altissimum*, is larger and of a darker green. Ives.

* *Holcus*, *Festuca*, *Saccharum*.

CLASS III. TRIANDRIA.

ORDER I. MONOGYNIA.

A. *Flowers superior.*

VALERIANA. Calyx 0, or with an extremely small margin: corol 1-petalled, 5-cleft, base gibbous: seed 1: stamens, 1, 2, 3 and 4, exsert. 48. 56—*pauciflora*, (valerian) root-leaves pinnate, stem-leaves ternate. 24. r.

FEDIA. Calyx 3 to 6-toothed: corol 5-parted: nut 2 or 3-celled: seed naked, or crowned with a tooth. 48. 56—*radiata*, (lamb lettuce) leaves spatulate. ☉. b.

IRIS. Calyx, spathe 2-valved: corol 6-parted, divisions alternately reflected: stigmas petal-like, 6. 18.—*pumila*, (dwarf flower-de-luce) scape shorter than the leaves. 24. b.—*virginica*, (wild iris or flag) stem 2-cornered, with alternate leaves. 24. y. b.—*gracilis* (Boston iris) petals beardless, inner ones erect: leaves linear, flat: germ triangular, twice grooved on each side. Bigelow. This plant is very abundant near New-Haven as well as Boston.

B. *Flowers inferior.*

COMMELINA. Calyx, spathe cordate: corol 6-petalled: nectaries 3, cross-form, inserted on peculiar filaments: capsule sub-globose, 3-celled. 6. 13—*communis* (day-flower) stem creeping. ☉. b. e.

LEPTANTHUS. Calyx, spathe 1-flowered: corol long-tubular; border 6-parted with the stamens on

the divisions : capsule 3-celled, many-seeded, gaping at the angles. 3. 1—*reniformis*, leaves round-cordate ; spathe. 2. w.

XYRIS. Calyx, glume 2-valved, in a head : corol 3-petalled, equal, crenate : capsule 3-valved, many-seeded, 6. 13—*anceps*, (yellow-eyed grass) culm 2-edged. 2. y.

C. *Flowers grassy : valves of the calyx glume-like : corol none.*

SCHOENUS. Spikelets sub-convolute, acute ; scales heaped in fascicles, outer ones dry, shining : corol 0 : seed 1, roundish, naked or surrounded with bristles. 3. 9—*albus*, (bog-rush) leaves bristle-form. 2. —*glomeratus*, leaves flat. 2.

CYPERUS. Glumes chaffy, scales imbricated 2-ways : seed single, beardless : spikelets compressed. 3. 9—*spathaceus*, (galingale) axillary racemes. 2. —*rotundus*, umbel doubly-compound. 2.

SCIRPUS. Glumes chaffy, scales imbricated every way : seed single, naked, surrounded with hairs or bristles. 3. 9—*macrostachius*, (club-rush) panicle clustered, leafy, terminal. 2. —*triqueter*, spikelets lateral, sessile, bunched. 2. —*retrofractus*, umbels simple. 2. —*acutus*, culm round, very tall. 2.

ERIOPHORUM. Glume chaffy, imbricated every way : seed beset round with very long dense woolly hairs. 3. 9—*cyperinum*, (cotton grass) panicles thrice-compound, one growing from the top of another. 2. —*angustifolium*, leaves channelled, triangular at top—*polystachium*, leaves flat, spikes peduncled. 2.

TRICHOPHORUM. Calyx, scales imbricated every way : seed beset with capillary bristles, which at length project out, always 6 in number : spikelets ovatis. 3. 9—*eriphorum*, (light-hair) culm leafy : spike crowded.

D. *Flowers grassy: valves of the calyx glume-like: corol 2-valved.*

SPARTINA. Calyx 2-valved, compressed, one of them keeled and longer than the other: corol 2-valved. 3. 9—*cynosuroides*, (salt-grass) peduncles rough. 2—*juncea*, peduncles smooth. 2—*glabra*, valves of calyx mostly glabrous. 2.

CENCHRUS. Involucre divided, echinate, 3 or 4-flowered: glumes 2-valved, 2-flowered: corol 2-valved, awnless: style 2-cleft, 4, 10—*echinatus* (hedgehog grass) spike conglomerate.

* *Juncus*, *Galium*.

ORDER II. DIGYNIA.

The proper Grasses.

A. *Flowers perfect.*

1st. *Glume 1-flowered.*

ORYZOPSIS. Calyx 2-valved, lax, obovate: corol teretish-ovate, leathery: valves 2, outer one awned at the apex: appendages 2, linear, chaffy, 4. 10—*asperifolia*, (mountain rice) leaves rough.

PANICUM. Calyx 3-valved, the third valve dorsal and very minute: corol 2-valved: inflorescence various. 4. 10—*crus-galli*, (cockfoot grass) spike doubly-compound. ☺—*glaucum*, (panic grass) spike terete. ☺—*verticillatum*, spike whorled. ☺—*latifolium*, leaves broad and hairy at the neck of the sheath. 2—*nitidum*, panicle very branching, flowers minute.

DIGITARIA. Calyx 2 or 3-valved, concave; the outer one very small or none, the inmost one of the length of the corol: corol 2-valved, oblong-ovate, awnless: style very long: spikes digitate, linear: flowers in pairs. 4. 10—*sanguinalis*, (finger grass) culm creeping, flowers imbricate. ☺—*dactylon*, scions creeping, spikes finger-form. 2.

ARISTIDA. Calyx 2-valved : corol 1-valved, with 3 awns at the tip. 4. 10—*dichotoma*, (beard grass) culm forked.

ALOPECURUS. Calyx 2-valved : corol 1-valved, simple at the tip ; sometimes awned at the base. 4. 10—*pratensis*, (foxtail grass) culm erect. 2/ —*geniculatus*, culm geniculate.

PHALARIS. Calyx 2-valved, valves keeled, nerved, equal in length, including the 2-valved pilose corol. 4. 10—*arundinacea*, (ribbon grass) panicle oblong, compact, leaves particoloured. 2/ . e.

HORDEUM. Calyx lateral, 2-valved, 1 or 2-flowered ; florets in threes, the middle one sessile, lateral ones often barren : corol 2-valved, acute, outer valve awned. 4. 10—*vulgare* (barley) florets in 2 erect rows. e.—*jubatum*, involucre bristle-form.

MILIUM. Calyx 2 valved, 1-flowered, ventricose : corol 2-valved, very short : stigmas pencil-form. 4. 10—*effusum*, (millet) panicked, awnless. e.

AGROSTIS. Calyx 2-valved, 1-flowered, valves acute : corol 2-valved : stigmas longitudinally hispid or plumose, (florets spreading) 4. 10—*vulgaris* (red top) panicle spreading, glume calyx twice as long as corol. 2/ —*alba*, panicle lax, culm creeping—*stricta*, panicle long, stiff and strait. 2/ .

SACCHARUM. Calyx involucre with long wool, 2-valved : corol 1 or 2-valved : stigmas 1 to 3. 4. 10—*officinarum* (sugar cane) flowers panicked, leaves flat. 2/ .

MUHLENBERGIA. Calyx 1-valved, very minute : corol 2-valved, base hairy, outer valve awned at the top : seed 1, oblong acuminate (Flowers panicked) 4. 10—*diffusa*, glabrous : culm weak : panicle slender, compact. 2/ —*erecta*, pubescent ; culm erect and firm : panicle lax.

LEERSIA. Calyx 0 : corol 2-valved, closed ; valves compressed, boatform, awnless. 4. 10—*ory-*

zoides (cut grass) spikelets spreading. 2. — *virginica*, spikelets close-pressed—*lenticularis*, spikelets imbricate, glumes ciliate.

TRICHODIUM. Calyx 2-valved, valves nearly equal, acute; keel with small spines: corol 1-valved, awnless, shorter than calyx: stigmas nearly sessile, sub-hispid. Panicked. 4. 10—*laxiflorum*, (thin grass) culm erect, branched, slender. 2.

PHLEUM. Calyx indurated, 2-valved, sessile; linear, truncate, bicuspidate: corol inclosed. 4. 10. — *pratense* (timothy grass) spike long, cylindric. 2. 2d. Glumes 2 or 3-flowered; panicked.

AIRA. Calyx glossy, 2-valved, 2-flowered: corol 2-valved, awnless, or awned at the base. 4. 10. — *cespitosa*, (hair grass) corol with a strait awn—*flexuosa*, awned, geniculate—*obtusata*, awnless.

3d. Glumes 2-flowered or more; close-spiked.

ELYMUS. General calyx involucre-like, 4-leaved, 2-flowered; partial calyx lateral, 2-valved, aggregate-ternate, many-flowered. (In a spike.) 4. 10—*virginicus* (lime-grass) involucre striate, long-awned. 2.

ELEUSINE. Calyx awnless, many-flowered: inflorescence an unilateral digitate spike: corol 2-valved, awnless. 4. 10—*indica*, (dog-tail grass) spikelets about 6-flowered.

LIMNETIS, or DACTYLIS. Calyx 2-valved, one valve smaller: corol 2-valved, awnless, compressed, carinate: style long. Panicles strait; spikes lateral-flowered, florets imbricate. 4. 10—*glomerata*, (orchard grass) a panicle condensed into a spike-form head. 2.

SECALE. Calyx 2-valved, 2 or many-flowered, opposite, solitary: glumes linear-lanceolate, smooth or channelled both sides. 4. 10—*cereale*, (rye) glumes rough-ciliate.

TRITICUM. Calyx 2-valved, about 3-flowered,

alternate ; florets obtusish and pointed : glumes beardless or interruptedly bearded : spikelets shortish. 4. 10—*hybernum*, (winter wheat) nearly awnless. ♂ —*aestivum*, (summer wheat) long-awned. ☹.

LOLIUM. Calyx 1-leaved, permanent, many-flowered : florets in a 2-rowed simple spike. 4. 10—*perenne*, (darnel-grass) spike awnless, ♀ —*temulentum*, spike awned. ☹.

ATHEROPOGON. Calyx 1-valved, 2-flowered : corol 2-valved, awned. 4. 10—*apludoides* (hairy beard-grass) leaves very narrow. ♀.

4th. *Glumes many-flowered ; in panicles.*

UNIOLA. Spikelets flat, 2-edged, ovate : calyx many-glumed : corol 2-valved, awnless, inner one smallest : stamens 1 to 3 : appendages 2, somewhat 2-horned. 4. 10—*spicata* (sea rush-grass) panicle spike-form, pointing one way. ♀ —*latifolia*, panicle lax. ♀. Monandrous.

BRIZA. Calyx 2-valved, many-flowered : spikelets of the panicle 2-ranked : valvelets inflated heart-form, obtuse ; inner one minute. 4. 10—*canadensis* (quake-grass) culm erect, panicle lax.

SORGHUM. Polygamous. Florets in pairs ; one perfect and sessile, the other staminate or neutral and pedicelled. 4. 10—*saccharatum*, (broom-corn) panicle somewhat whorled, spreading : seed oval. ☹.

POA. Calyx 2-valved, many-flowered : corol ovate ; valves 2-coloured, acutish, scarious at their margins : spikelets of the panicle ovate, awnless. 4. 10—*pratensis*, (meadow-grass) panicle diffused, spikelets 4-flowered. ♀ —*trivialis*, panicle diffused, spikelets 3-flowered. ♀ —*compressa*, (blue-grass) culm compressed, panicle pointing one way. ♀ —*repens*, culm creeping, spikelets 6 to 10-flowered. ☹.

FESTUCA. Calyx 2-valved, many-flowered; spikelets oblong, teretish, or diverging; awnless or furnished with a terminal awn. 4. 10—*pratensis* (fescue-grass) panicle pointing one-way, spikelets linear. 2—*lucida*, panicle nodding, spikelets ovate-lanceolate. 2—*fluitans*, panicle erect. 2.

BROMUS Calyx 2-valved; spikelets oblong, terete-2 ranked; valves awned below the tip. 4. 10.—*secalinus*, (ches-) awnless, panicle spreading—*mollis*, (broom-grass) florets imbricate, panicle compact. ♂.

AVENA. Calyx 2-valved, many-flowered; valves with a twisted awn on the back: glumes membranaceous and somewhat follicle-like. 4. 10—*sativa*, (oats) panicle, calyx 2-seeded. ☉.

ARUNDO. Calyx 2-valved, one or many-flowered, glabrous: florets heaped together: corol surrounded with wool. 4. 10—*phragmites*, (reed-grass) calyx 5-flowered. 2.

B. Flowers polygamous.

1st. *Glume 1-flowered.*

ANDROPOGON. Calyx glume 2-valved: corol 3-valved: flowers in pairs; 1 sessile perfect, the other peduncled, staminate, awnless—rarely neutral. 4. 10—*nutans*, (beard-grass) panicle compact, nodding, calyx bristly.

2d. *Glume 2-flowered, or more. Panicle.*

HOLEUS. Calyx glume 2-valved, opaque, nervous: corol smaller than calyx, 2-valved, the outer one-awned under the tip: nectary linear 2-parted: stigma subsessile. 4. 10—*lanatus*, (soft-grass) glumes hairy. 2—*odoratus*, glumes 3-flowered, pointed, awnless. 2.

* *Alsine.*

CLASS III. ORDER III.

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ORDER III. TRIGYNIA.

A. Corol 5-petalled.

HOLOSTEUM. Calyx 5-leaved: capsule 1-celled, nearly cylindric, bursting at the top. 22. 82—*succulentum*, (succulent chickweed) leaves oval, fleshy:

B. Corol 3-petalled.

LECHEA. Calyx 3-leaved: capsule 3-celled, 3-valved, with 3 inner valvalets: seed 1. 22. 81—*major*, (pinweed) flowers dull, scattered—*minor*, flowers dull, panicked.

C. Corol none.

MOLLUGO. Calyx 5-leaved, inferior: capsule 3-celled, 3-valved, many-seeded. 22. 82—*verticillata*, (carpet-weed) leaves whorled, stem prostrate.

☉. w.

QUERIA. Calyx 5 leaved, inferior: capsule 1-celled: seed 1. 22. 82—*canadensis*, stem forked, leaves lance-ovate. 24.

PROSERPINACA. Calyx 3-parted superior: nut 3-sided, 3-celled, crowned by the calyx. 15. 22—*palustris*, (mermaid weed) leaves lanceolate, serrate above, and divided below, water. 24. g.

* *Zanthoxylon*, Alsine.

CLASS IV. TETRANDRIA.

ORDER I. MONOGYNIA.

A. Flowers 1 petalled, inferior, calyx 4-cleft.

CALLICARPA. Corol 4-cleft, tubular: berry 4-seeded. 43. 38—*Americana*, (Bermuda mulberry) cymes sessile, leaves oval serrate. 42. r.

PLANTAGO. Corol 4-cleft reflexed: capsule 2-celled, opening transversely: stamens very long. 54. 31—*major*, (plantain) leaves broad ovate 24. w. —*lanceolata*, (ribwort) leaves lanceolate. 24.

LYCIUM. Corol tubular, having the throat closed by the beards of the filaments: berry 2-celled,

many-seeded. 28. 41—*carolinianum*, (box thorn) leaves oblong-spatulate, sharp. $\frac{1}{2}$. p.

FRASERA. Corol 4 cleft, spreading; segments with bearded glands in the middle: capsule compressed, sub-margined, 2-valved: seeds few, imbricated—*walteri*, (pyramid flower) leaves oblong-oval, opposite and whorled. y.

BARTONIA, or CENTAURELLA. Corol 4-cleft, bell-form, permanent: capsule 1-celled, 2-valved, many-seeded.—*Paniculata*, (screw-stem) stem square. w.

HOUSTONIA. Corol salver-form: capsule 2-celled, 2-valved, 2-seeded. 47. 57—*coerulea*, (Venus' pride) root-leaves ovate. $\frac{1}{2}$. b.

B. *Flowers 1-petalled, superior.*

MITCHELLA. Calyx 4-toothed: corols 2 on each germ, tubular: berry double, 4-seeded: stigmas 4. 48. 57—*repens*, (partridge-berry) stem decumbent, leaves roundish. $\frac{1}{2}$. w.

SANGUISORBA. Calyx inferior, 2-leaved: corol superior, 4 parted: capsule between the calyx and corol. 54. 92—*medica*, (burnet saxifrage) stamens longer than corol, spike cylindric. y.

CEPHALANTHUS. Inflorescence in a head: general calyx none: proper calyx superior: corol funnel-form: receptacle globular, hairy: capsules 2 to 4-partible: seed solitary, oblong. 48. 57—*occidentalis*, (button bush) flowers in heads. $\frac{1}{2}$. w.

LINNAEA. Calyx double; that of the fruit 2-leaved, that of the flower 5-parted: corol bell-form: stamens somewhat didynamous: berry 3-celled, dry. 48. 58—*borealis*, stem creeping, flowers in twins. $\frac{1}{2}$. w. r.

RUBIA. Calyx 4-toothed: corol 4 or 5-cleft, bell-form: berries 2, one-seeded, (stamens 4-5; leaves stellate.) 47. 57—*tinctoria*, (madder) leaves whorled, stem square, prickly. $\frac{1}{2}$. y.

GALIUM. Calyx 4-toothed: corol flat: fruit dry: seeds 2, roundish: (leaves stellate.) 47. 57—*tinctorium*, (bedstraw) stem whorls in sixes, branch whorls in fours. 2. w.—*apharine*, fruit prickly, whorls in eights. ☉. w.—*verum*, fruit smooth, whorls in eights. 2. y.—*brachiatum*, whorls in fours. 2. w.—*asprellum*, whorls all in sixes, stem decumbent. 2. w.

DIPSACUS. Common calyx many-leaved; proper calyx 1-leaved superior: receptacle chaffy: seed 1, crowned: flowers aggregate. 48. 56—*fullo-num*, (teasel) chaff hooked. ♂. e.—*sylvesiris*, chaff strait. ♂. b.

C. *Flowers 4-petalled, inferior:*

AMMANIA. Calyx tubular, plaited, 8-toothed: petals 4, or none, on the calyx: capsule 4-celled—(sometimes 2-celled and 8-stamened.) 17. 91—*humilis*, (tooth cup) stem procumbent. ☉. r.

CORNUS. Calyx 4-toothed: drupe with a 2-celled nut. Some species have a 4-leaved involucre. 45. 58—*florida*, (dogwood) involucre large, petal-like. 2. y. w.—*paniculata*, cymes paniced. 2. w.—*alba*, cymes flat. 2. w.—*circinata*, leaves orbicular, acuminate—branches warty.

LUDWIGIA. Calyx 4-parted, the divisions long, permanent: capsule 4-cornered, 4-celled, perforated at the top, many-seeded—(petals sometimes wanting.) 17. 88—*alternifolia*, (seed-box) glubrous. ☉. y.—*filosa*, rough-haired. 2. y.

E. *Flowers not complete.*

POTHOS. General calyx a spathe: perianth 0: spadix simple, covered with flowers: petals 4, wedge-form: berries globose, 2-seeded, inclosed in a spongy receptacle. 2. 7—*foetida*, (skunk-cabbage) stemless, leaves oval 2. p.

ISNARDIA. Calyx bell-form, 4-parted, superior:

corol o : capsule 4-celled, 4-cornered, many-seeded, surrounded by the calyx. 17. 91—*palustris*, (water-purslane) creeping, leaves ovate. ☺. g.

RIVINA. Corol 4-petalled, inferior, permanent : calyx o : berry 1-seeded : seed lenticular, rough, (stamens 4, 8 or 12) 12. 29—*laevis*, racemes simple, leaves ovate. r.

* *Convallaria*, Cardamine, Prinos.

ORDER II. DIGYNIA.

HAMAMELIS. Involucre 3-leaved : perianth 4-leaved : petals 4, very long, linear : nut 2-celled, 2-horned. 54. 78—*virginica*, (witch hazel) leaves undulate-toothed, ob-ovate. Flowers in autumn, and perfects its seed the following spring. h. y.

* *Cuscuta*, Swertia.

ORDER IV. TETRAGYNIA.

ILEX. Calyx 5-toothed ; corol 4-parted, wheel-form ; style o ; berry 4-celled, cells 1-seeded. 43. 95—*opaca*, (holly) leaves evergreen, repand, spinous. h. g.—*canadensis*, leaves deciduous, ovate, mostly entire. h. w. y.

SAGINA. Calyx 4-leaved ; petals 4 ; capsule 4-celled, 4-valved, many-seeded. 22. 82—*procumbens* (pearl-wort) stem procumbent. h. w.

POTAMOGETON. Calyx o : petals 4 ; style o : seeds 4. 15. 6.—*natans*, (pond-weed) upper leaves with rounded bases—*fluitans*, upper leaves lance-oval.

CLASS V. PENTANDRIA.

ORDER I. MONOGYNIA.

A. *Flowers 1-petalled, inferior ; having 4 naked seeds.* Rough-leaved plants.

PULMONARIA. Calyx prismatic 5-angled : corol funnel-form, with an open throat : seeds roundish, obtuse. 41. 42—*virginica*, (lungwort) leaves ovate, panicle terminal.

LITHOSPERMUM. Calyx 5-parted : corol funnel-form, with an open throat : seeds ovate, pointed, stoney : stamens and pistils inclosed. 41. 42—*officinale*, (stone-seed, or gromwell) seeds smooth. 24. y.—*arvense*, seeds wrinkled.

CYNOGLOSSUM. Calyx 5-parted : corol funnel-form, vaulted, throat closed : seeds depressed, affixed laterally to the style within. 41. 42—*officinale*, (hound-tongue) leaves sessile. 24. p.—*amplexicaule*, upper leaves clasping. 24. w. b.

ANCHUSA. Calyx 5-parted : corol funnel-form, vaulted, throat closed : seeds marked at the base, and their surface generally veined. 41. 42—*officinalis*, (bugloss) spikes one-sided, leaves lanceolate. 24. e.

MYOSOTIS. Calyx half-5-cleft : corol salver-form, curved, 5-cleft, vaulted, throat closed, the lobes slightly emarginate : seeds smooth or echinate. 41. 42—*scorpioides* (scorpion grass) racem-
ed, leaves lance-oval. 24. b.

HELIOTROPIMUM. Calyx tubular, 5-toothed : corol salver-form, 5-cleft, with teeth or folds between the divisions ; throat open. (Spikes recurved, involute.) 41. 42.—*indicum* (turnsole) leaves heart-ovate, acute. 24. b. e.

ONOSMODIUM. Calyx deeply 5-parted : corol oblong, somewhat bell-form, with the acute divisions converging, the upper part of the corol being ventricose and half-5-cleft, throat open : anthers sessile enclosed : styles exsert. (Spikes revolute.) 41. 42—*hispidum*, (false gromwell) leaves oval-lanceolate, papillose-punctate.

BORAGO. Corol wheel-form, the throat closed with rays. 41. 42—*officinalis*, (borage) leaves alternate. e.

SYMPHITUM. Limb or upper part of corol, tubular-swelling, the throat closed with subulate rays.

41. 42—*officinalis*, (comfrey) leaves decurrent. 24. w. e.

ECHIU. Corol mostly irregular, throat naked, large: stigma cleft. 41. 42—*vulgaris*, (viper's bugloss) stem bristly, spikes lateral. b.

B. *Flowers 1 petalled, inferior; seeds covered with a 1-celled capsule: calyx 5-parted or 5-toothed.*

HYDROPHYLLUM. Corol bell-form, 5-cleft, with 5 longitudinal honey-bearing grooves inside: capsule globose, 2-valved: stigma 2-cleft. 41. 42—*virginicum*, (water-leaf) leaves pinnate-pinnatifid. 24. w.—*canadense*, leaves lobed. 24. w.

ANAGALLIS. Corol wheel-form, deeply 5-parted: capsule opening transversely: stamens hairy. 20. 34—*arvensis*, (scarlet pimpernel) stem square, procumbent; leaves dotted. ☉. r.

LYSIMACHIA. Corol wheel-form: capsule globular, 10-valved, mucronate: stigma obtuse. (In some species the filaments are united at the base.) 20. 34—*ciliata*, (loosestrife) petioles ciliated. 24. y. *thyrsifolia*, racemes lateral. 24.—*hybrida*, leaves opposite, lanceolate, acute at the base—*stricta*, stem squarer, racemes terminal 24. y.—*quadrifolia*, leaves whorled or in pairs nearly opposite, with axillary 1-flowered peduncles. 24. y. Near the outlet of the Beaver Pond (New-Haven) I found this species in abundance, with 2, 3, 4, 5 and 6 leaves together; though Linneus allows but 4.

DODECANTHEON. Corol wheel-form, reflexed capsule oblong: stamens on the inside of the tube: stigma obtuse. 20. 34.—*meadia*, (false-cowslip) leaves repand-toothed, umbels many-flowered. 24. p.

MENYANTHES. Corol hairy: capsule ovate: stigma 2-cleft. 21. 34—*trifoliata*, (buck bean) leaves 3 on a petiole. 24. w.

PRIMULA. Umbellets involucred: tube of corol

cylindric, throat open, divisions of corol emarginate : capsule 1-celled with a 10-cleft mouth : stigma globular. 21. 34—*vulgaris*, (primrose) scape 1-flowered. 24.—*veris*, (cowslip) scape many-flowered. 24.

HOTTONIA. Corol salver-form : stamens on the tube of the corol : stigma globular. 21. 34—*palustris*, (feather-leaf) flowers whorled. 24.

—— Differ from the above in having 2-celled capsules.

SPIGELIA. Corol funnel-form : twin capsules 4-valved, 2-celled : stigma simple : seeds many. 47. 46—*marilandica*, (pink-root) leaves lance-ovate, sessile, opposite. 24. p.

CONVOLVULUS. Corol funnel-form, plaited : stigma 2-cleft or double : cells of the capsule 2 or 3 ; each 2-seeded. 29. 43—*sepium*, (morning glory) hind lobes of the arrow-form leaf truncate. 24. p. w.—*stans*, stem erect. 24. w.—*batatas*, (sweet potatoe) leaves heart-halbert-form. 24. p. w.—*tricolor*, leaves lance-ovate. ☉.

DATURA. Calyx tubular, angled, caducous : corol funnel-form, plaited : capsule 4-valved, 4-celled, smooth or thorny. 28. 41—*stramonium*, (thorn-apple) pericarp spinous. ☉. w. b.

NICOTIANA. Corol funnel-form, limb plaited : stigma notched : stamens inclined : capsules 2-celled, 2-valved. 28: 41—*tabacum*, (tobacco) leaves decurrent. ☉. p.

VERBASCUM. Corol wheel-form, somewhat irregular : stamens declined, hairy : capsules 2-celled, 2-valved ; valves inflexed : many-seeded. 28. 41.—*thapsus*, (mullein) leaves decurrent. ☉. y. —*blattaria*, (cockroach mullein) leaves clasping. ☉. y.

CHIRONIA. Calyx somewhat bell-form : corol

salver-form or wheel-form : anthers becoming spiral ; filaments on the tube of the corol : pistil declined : pericarp 4-celled. 20. 40—*angularis*, (centaury) leaves clasping, stem acute-angled. ☉. p. —*venosa*, stem somewhat decumbent, leaves lanceolate. 24. w.

ATROPA. Corol bell-form : stamens distant : berry globular, 2-celled, sitting on the calyx. 28. 41—*belladonna*, (deadly nightshade) leaves ovate. 24. e.

PHACELIA. Corol somewhat bell-form, 5-cleft : stamens exsert : capsule 2-celled, 2-valved, 4-seeded. 41. 42—*fimbriata*, corol fringed. ☉. b. —*parviflora*, corol entire. ☉. b.

HYOSCYAMUS. Corol funnel-form, obtuse, irregular : stamens inclined : capsule 2-celled, covered with a lid. 28. 41—*niger*, (henbane) leaves clasping, pinnate. ☿. y. p. e.

——— *Differ from the above in having 3-celled capsules.*

DIAPENSIA. Calyx 5-leaved, imbricated with leaflets : corol salver-form ; limb flat, 5-cleft : stamens crowning the tube of the corol : capsule 3-valved, many-seeded. 21. 43—*lapphonica*, leaves linear. 24. w.

PHLOX. Calyx prismatic : corol salver-form, with a tube somewhat curved : filaments unequal in length : stigma 3-cleft : capsule 3-celled, 1-seeded. 20. 44—*paniculata*, (lichnedia) segments of corol rounded. 24. p. —*subulata*, lobes of corol notched. 24. w. p.

POLEMONIUM. Calyx-half 5-cleft : corol wheel-form, 5-parted : stamens on 5 valves closing the bottom of the tube : stigma 3-cleft. 29. 44—*repens*, (Greek-valerian) leaves pinnate, root creeping. 24. b.

IPOMOEA. Corol funnel or bell-form, with 5 plaits : stigma globe-headed, papillose : capsule 2 or 3-celled, many-seeded. 29. 43—*quamoclit*, (cypress vine) leaves pinnatifid. ☺. p. r.

PYXIDANTHERA. Divisions of calyx lying over each other, chaffy-membranaceous : corol bell-form, 5-parted : filaments lamellar : cells of anthers opening transversely : stigmas 3 : style thick. 21. 43—*barbulata*, (box-flower) leaves lance-wedge-form. h. w.

——— *Differ from the above in having 5-celled capsules.*

AZALEA. Corol tubular, half-5-cleft, somewhat oblique : stamens on the receptacle : stigma obtuse, usually ending with 5 short papillae. 18. 50—*viscosa*, (wild honey-suckle) tube of corol twice as long as the divisions. h. w.—*nitida*, tube of corol not twice as long as the divisions. h. w. y.

VINCA. Corol salver-form, twisted, border 5-cleft, with oblique divisions ; throat 5-angled : seed naked, oblong ; follicles 2, erect, terete, narrow. 30. 47—*minor*, (periwinkle) stem procumbent, lance-oval.

——— *Differ from the above in having 2-celled berries.*

SOLANUM. Calyx permanent : corol bell or wheel-form, 5-lobed, plaited : anthers thickened, with 2 pores at the top : berry containing many seeds. 28. 41—*tuberosum*, (potatoe) leaves interruptedly pinnate. y. w. p.—*nigrum*, (nightshade) leaves angular. ☺. w.—*dulcamara*, (bittersweet) climbing, leaves halbert-form. h. b.

PHYSALIS. Corol bell or wheel-form : anthers converging : berries contained in an inflated calyx : seeds numerous. 28. 41—*alkekengi*, (winter-cher-ry) leaves in pairs, entire, acute.

CAPSICUM. Corol wheel form : berry juiceless : anthers converging : calyx angular. 28. 41—*annuum*, (red pepper) flowers solitary. ☺. w. e.

C. *Flowers 1-petalled, half-inferior : calyx 5-cleft.*

SAMOLUS. Corol salver-form, 5-lobed with intermediate scales fencing the stamens between them : capsule 1-celled, 5-toothed ; many-seeded. 21. 34—*valerandi*, (brookweed) leaves obtuse, racemes many-flowered. ♀. w.

D. *Flowers 1-petalled superior : calyx 5-cleft.*—
(Stems woody.)

LONICERA. Corol tubular, 5-cleft, unequal : berry 2 or 4-celled : seeds many. 48. 58—*semper-virens*, (trumpet honey-suckle) tube of corol dilating upwards. ♀. r. e.—*dioica*, corols ringent, gibbous at the base. ♀. y. p.

XYLOSTEUM. Corol tubular, border 5-parted, nearly equal : berries in pairs, whose bases are connate, or single coadunate ; 2-celled. 48. 58—*ciliatum*, (fly honey-suckle) peduncle 2-flowered, berries distinct ; leaves entire, hairy. ♀. y. w.—*solonis*, two flowers seated on one germ ; berry double, not distinct : leaves oblong-ovate, villose. Found on the White Mountains, (N. H.) by Dr. D. Solon. C. H. Smith.

DIERVILLA. Calyx oblong : corol twice as long as calyx, funnel-form, border 5-cleft, spreading : capsule oblong 4-celled, many-seeded. 48. 58—*canadensis*, (yellow honey-suckle) leaves serrate. ♀. y.

(Stems not woody.)

CAMPANULA. Corol bell-form, closed at the bottom by valves bearing the stamens : stigma 3 to 5-cleft : capsule 3 to 5-celled, opening by lateral pores. 29. 52—*perfoliata*, (bell-flower) leaves clasping. ☺. b.—*rotundifolia*, root leaves-round-

ish-cordate, stem-leaves linear. $\mathcal{L}$. b.—*media*, (Canterbury bells) capsules 5-celled, flowers erect. δ .

LOBELIA. Corol irregular, often irregularly slit-
ted: anthers cohering and somewhat curved: stig-
ma simple: capsule 2 or 3-celled: 29. 52—*cardi-
nalis*, (cardinal flower) spike pointing one-way. $\mathcal{L}$.
r.—*inflata*, capsules inflated. δ . w. b.—*pallida*,
leaves toothed. $\mathcal{L}$. w. b.—*syphilitica*, leaves with
sinuses reflexed. $\mathcal{L}$. b.

MIRABILIS. Corol funnel-form, coarctate be-
low: calyx inferior: germ between the calyx and
corol: stigma globular. 54. 32—*jalapa*, (four o'-
clock) flowers peduncled, leaves glabrous. e.

TRIOSTEUM. Calyx of the length of the corol:
corol tubular, 5-lobed: berry 3-celled, 3 seeded.—
48. 58—*perfoliatum*, (feverwort) leaves connate,
flowers whorled. $\mathcal{L}$. p.

E. *Flowers 5-petalled, inferior. (Stems woody.)*

RHAMNUS. Calyx cup-form, 4 or 5-cleft; corol
consists of scales fencing in the stamens and in-
serted on the calyx (sometimes wanting); stigma
either simple, 2 or 4-cleft; berry 3 or 4-seeded;
(sometimes polygamous or dioecious.) 43. 95.—
catharticus (buck-thorn) spines terminal. $\mathfrak{h}$ —*alni-
folius*, no spines. $\mathfrak{h}$.

CEANOTHUS. Petals bay-like, vaulted, standing
in the cup-form calyx; berry, or capsule, dry, 3-
grained. 43. 95.—*americanus* (New-Jersey tea)
leaves oval, serrate, downy beneath. $\mathfrak{h}$. w.

CELASTRUS. Calyx flat: corol spreading: cap-
sule 3-angled, 3-celled, berry-like: stigma 3-cleft:
seeds calyptred. 43. 95—*scandens* (staff tree)
climbing: fruit berry-like, red, permanent, open-
ing with 3-valves. $\mathfrak{h}$. w-y.

EUONYMUS. Calyx 5-parted, flat: corol flat:

capsule 5-angled, 5-celled, 5-valved, coloured; seeds calyptred. 43. 95—*atropurpureus* (spindle tree) peduncles many-flowered. $\frac{1}{2}$ p.—*americanus*, peduncles about 3-flowered. $\frac{1}{2}$ y.

VITIS. Calyx 5-toothed: petals cohering at the tip hood-like, withering: berry 5-seeded, globular. (Often dioecious.) 46. 72—*vulpina* (grape vine) leaves heart-form, tooth-serrate. $\frac{1}{2}$ —*riparia*, leaves short, 3-cleft, petioles hairy. $\frac{1}{2}$ —*rotundifolia*, leaves heart kidney-form. $\frac{1}{2}$.

AMPELOPSIS. Calyx 5-toothed: petals reflexed, spreading: berry 5-seeded, globular. 46. 72—*quinquefolia* (false grape) leaves in fives. $\frac{1}{2}$ g.

ITEA. Calyx 5-cleft, bearing the 4 long linear reflexed petals: stigma capitate, 2-lobed: capsule 2-valved; the valves bearing the seeds and having inflexed margins. 18. 50—*virginica*, leaves ovate, serrate; racemes terminal. $\frac{1}{2}$ w.

(Stems not woody.)

IMPATIENS. Calyx 2-leaved: corol irregular spurred: anthers cohering: capsule elastic, 5-valved. 24. 73—*nolli-me-tangere* (jewel weed) peduncles many-flowered. $\odot$. y.—*balsamina* (touch-me-not, or balsam weed) peduncles 1-flowered.

VIOLA. Calyx 5-leaved: corol irregular, with a horn behind (sometimes the horn is wanting:) anthers attached by a membranous tip: capsule 1-celled, 3-valved. 29. 80.—STEMLESS. *Cucullata*, (violet) leaves cordate, flowers inverted—*lanceolata*, leaves lanceolate—*palmata*, leaves palmate—*pedata*, leaves pedate—*primulifolia*, leaves heart-oblong, petioles membrane-winged. STEMMED — *Pubescens*, leaves cordate, hairy—*canadensis*, leaves cordate, glabrous—*tricolor*, leaves tooth-crenate. e.

CLAYTONIA. Calyx 2-valved: stigma 3-cleft: capsule 1-celled, 3-valved, 3-seeded. 13. 86—*virginica*, leaves lance-linear. $\frac{1}{2}$ w-r.

F. *Flowers 5-petalled, superior.*

RIBES. Corol and stamens inserted on the calyx: style 2-cleft: berry many-seeded. 36. 85—*rubrum* (currant) flowers flattish. h. g. e.—*nigrum*, flowers oblong. h. g. y—*floridum*, flowers cylindric. h. w. y.

HEDERA. Petals oblong: berry 5-seeded, surrounded by the calyx: style simple. 46. 58—*helix*, (European ivy) leaves 5-angled. flowers umbelled. h. e.

G. *Corols wanting.*

GLAUX. Calyx inferior, 5-lobed, coloured: capsule 1-celled, 5-valved, 5-seeded, surrounded by the calyx. 17. 91—*maritima* (sea-milkwort) grows in salt water. u.

THESIUM. Calyx superior, half-5-cleft, bearing the stamens: nut 1-seeded, covered with the permanent calyx. 31. 24—*umbellatum* (false toad-flax) leaves oblong. u. w. g.

ORDER II. DIGYNIA.

A. *Follicles 2: corol 1-petalled, with a 5-parted border.*

PERIPLOCA. Nectary pitcher-form, putting out 5 threads, surrounding the stamens: corol wheel-form: stigma capitate, 5-cornered. 30. 47—*graeca* (follicle vine) flowers terminal. u. p.

APOCYNUM. Corol bell-form: stamens alternating with 5 filamentous pointed nectaries: stigma broad almost sessile: follicles long linear. 30. 47—*androsemifolium* (dog-bane) cymed, corol spreading. u. r.—*cannabinum*, (Indian hemp) paniced, corol erect. u. y. g.

B. *Capsules 1 or 2-celled, 2-valved: corol 1-petalled: calyx 5-cleft.*

SWERTIA. Corol wheel-form with nectariferous

pores at the base of the divisions: capsule 1-celled. 20. 46—*pusilla*. (false gentian) stem 1-flowered.

☉. b.—*corniculata*, corol 4-horned. ☉. g-y.

GENTIANA. Corol with a tubular base, without pores: capsule 1-celled, oblong: columellas 2, longitudinal. 20. 46—*saponaria*. (gentian) corols 5-cleft. 2. b.—*crinita*, corols 4-cleft, tetrandrous. b.

CUSCUTA. Corol 5-cleft: capsule 2-celled, dividing transversely at the base: seeds binate. 29. 43—*americana* (dodder) stem twining, leafless, yellow, parasitic. w.

C. Corol 5-petalled.

HEUCHERA. Calyx inferior: corol on the calyx: capsule 2-beaked, 2 celled. 13. 84—*americana* (allum-root) leaves radical, cordate. 2. r.

PANAX. Polygamous. Umbelled. Involucre many leaved: calyx 5-toothed, superior: berry heart-form, 2-seeded: calyx, in the staminate flowers, entire. 46. 59—*quinquefolia*, (ginseng) leaflets quinate 2. g.—*trifolia*, leaves ternate. 2. w.

D. Corol o. (Stem herbaceous, except *Atriplex halimus*.)

SALSOLA. Calyx 5-leaved with a capsular base: capsule 1-celled, with a spiral seed. 12. 29—*kali*, (salt-wort) thorny, flowers axillary.

CHENOPODIUM. Calyx 5-leaved, 5-angled, inferior: seed 1, lens-like, invested by the calyx. 12. 29—*album*, (pigweed) leaves deltoid, erose. ☉. g.—*rubrum*, leaves heart-deltoid, sinuate-toothed—*hybridum*, leaves cordate, tooth-angled—*botrys* (oak of Jerusalem) leaves sinuate-pinnatifid. ☉. g.—*anthelminticum* (wormseed) leaves ovate-oblong, toothed. g.

BETA. Calyx 5-leaved: seed kidney-form within the fleshy substance of the base of the calyx. 12.

29—*vulgaris* (red beet) lower leaves ovate. ♂. e.
—*cicla*, (white beet) leaves ternate. ♂. e.

ATRIPLEX. Calyx 5-leaved, inferior: style 2-parted: seed 1, depressed. Pistillate flowers are intermixed, in which the calyx is 2-leaved. 12. 29
—*patula*, (orach) stem procumbent. ☉.—*halimus*, stem erect, very branching. ♀. (Stem woody.)

ULMUS. Calyx bell-form withering, border 5-cleft: seed 1, enclosed in a flat membranaceous samara. (Stamens vary from 4 to 8.) 53. 99—*americana*, (elm) flowers pedicelled; a variety, *pendula*, has drooping branches. ♀.—*fulva*, (slippery elm) flowers sessile.

CELTIS. Polygamous. Calyx 5-parted: styles thickish, spreading: drupe 1-seeded: staminate flowers beneath the perfect ones, with 6-parted calyxes: stamens 6. 53. 99—*occidentalis* (nettle tree) leaves ovate rough.

E. Plants UMBELLIFEROUS. Flowers 5-petalled,
2-seeded.

—— With general and partial involucre.

ERYNGIUM. Involucre many-leaved: flowers in heads, all fertile: receptacle chaffy: fruit crowned, 2-partible. 45. 60—*maritimum* (sea-holly) leaves radical spinous. b.

CORIANDRUM. Corols radiate, with petals inflected, emarginate: general involucre 1-leaved; partial one halved: fruit globular. 45. 60—*sativum*, (coriander) fruit globose. w. e.

HYDROCOTYLE. Umbels simple and very small: flowers all fertile: involucre 4-leaved: petals entire: fruit half-orbicular, compressed. 45. 60—*americana*, (water-navelwort) leaves crenate, reniform. w.

SANICULA. Flowers of the disk abortive: umbels crowded into head-like heaps: seeds prickly.

45. 60—*marilandica*, (sanicle, blackroot) forked, leaves about 7-lobed. ♂. w.

HERACLEUM. General involucre caducous : flowers unequal : petals inflexed, emarginate : fruit oval, compressed, striate, margined, emarginate. 45. 60—*lanatum*, (cow parsley) leaves ternate, woolly beneath. ♀. w.

DAUCUS. Involucres pinnatifid : flowers somewhat radiate, those of the disk abortive : fruit hispid with hairs. (Umbels funnel-form.) 45. 60—*carota*, (carrot) seed bristly. ♂. w. e.

ANGELICA. Petals incurved : corols equal : calyx 5-toothed : style reflexed : fruit roundish, solid, 3-winged both sides. 45. 60—*triquinata*, (angelica) terminal leaflet sessile. ♀.

SISON. Petals lanceolate, inflected : umbels with few peduncles : fruit ovate, striate : involucres about 4-leaved. 45. 60—*canadense*, (hone-wort) umbel irregular, leaves ternate. ♀. w.

FERULA. Petals heart-form : fruit oval, flat-compressed, with 3 lines on both sides : flowers uniform, all fertile : general involucre caducous, partial ones many-leaved. (Generally tall.) 45. 60—*villosa*, (giant fennel) leaves triternate, leaflets serrate. ♀. w.

LIGUSTICUM. Involucre membranaceous : calyx 5-toothed : petals equal, involute, entire : fruit 3 or 5-ribbed each side, oblong. 45. 60—*levisticum*, (lovage) leaves manifold, upper one irregularly cut. ♀. e.

AMMI. Involucres pinnatifid : corols radiate, all perfect : fruit smooth or striate : umbels lax. 45. 60—*capillaceum*, (bishop weed) leaves capillary, many-cleft.

Sium. Involucres many-leaved : petals heart-form : fruit somewhat ovate, striate, compressed. 45. 60—*latifolium*, (water parsnip) leaves pinnate, umbels terminal. ♀. w.

SELINUM. Involucre reflexed: perianth entire: petals heart-form, equal: fruit flat-compressed, striated in the middle, oval-oblong. 45. 60—*canadense*, (milk-parsley) glabrous, leaves doubly-pinnate.

CONIUM. Partial involucre halved, somewhat 3-leaved: fruit somewhat globular, marked with 5 lines, crenate at both ends. 45. 60—*maculatum*, (poison hemlock) stem spotted, leaves tripinnate. ♂. w.

——— *With a partial, and without a general, involucre.*

CHAEROPHYLLUM. Involucre concave, reflexed, 5 to 8-leaved: petals inflexed, heart-form: fruit oblong, smooth or striated, very glabrous. 45. 60—*claytoni*, (sweet cicely) petioles 3-parted, leaflets pinnatifid-lobed. ♀.

CICUTA. Involucre 3 to 5-leaved: fruit subovate, grooved. 45. 60—*maculata*, (cowbane) stipules 2-lobed.

IMPERATORIA. Fruit roundish, compressed, gibbous in the middle, bound at the margin with a wing: petals inflex-emarginate. 45. 60—*ostruthium*, (master-wort) leaves biternate. e.

SCANDIX. Umbel simple: flowers rayed: involucre many-leaved, emarginate, or gash-pinnate: fruit somewhat hairy, terminated with a very long beak. 45. 60—*cerefolium*, (chervil) leaves tripinnate. ☉. w.

——— *Without a partial involucre, and rarely having a general one.*

SMYRNIUM. Fruit somewhat compressed, gibbous, striate: petals acuminate, keeled.—(Fruit becoming black.) 45. 60—*aurum*, (alexanders) leaves pinnate. ♀. y.—*integerrimum*, leaves ternate or biternate. ♀. y.

PASTINACA. Fruit oval, flat-compressed : petals involute, entire. 45. 60—*sativa*, (parsnip) leaves pinnate. ☉. y. e.

ANETHUM. Fruit ovatish, compressed, striate : petals involute, entire. 45. 60—*foeniculum*, (fennel) fruit ovate. ♀. e.—*graveolens*, (dill) fruit flattened. ☉. e.

APIUM. Fruit ovate, striate : involucre 1-leaved : petals equal. 45. 60—*graveolens*, (celery) stem-leaves wedge-form. ♂. w. e.

CARUM. Fruit ovate-oblong, striate : involucre about 1-leaved : petals keel-form, inflex-emarginate. 45. 60—*carui*, (caraway) stem branching. ♂. e.

* Polygonum, Scleranthus, Asclepias and Cynanchum, are usually placed here ; but they are carried to the 19th class on the authority of Doct. Smith.

ORDER III. TRIGYNIA.

A. Corols superior, 5-cleft.

VIBURNUM. Calyx 5-parted : berry or drupe 1-seeded. 43. 58—*opulus*, (snowball) leaves 3-lobed, petioles glabrous. ♀.—*acerifolium*, (maple-leaf) leaves 3-lobed, petioles hairy. ♀.—*lentago*, (sheep-berry,) leaves ovate, acuminate. ♀.

SAMBUCUS. Calyx 5-parted : berry 3-seeded. 43. 68—*canadensis*, (black-berried elder) cymes 5-parted. ♀. w.—*pubescens*, (red-berried elder) somewhat racemed. ♀. w.

B. Corols inferior, 5-petalled.

STAPHYLEA. Calyx 5-parted : capsules inflated, connate : nuts globular, having a cicatrice. 23. 95.—*trifoliata*, (bladder nut) leaves ternate. ♀. w.

RHUS. Calyx 5-parted : berry 1-seeded. 43. 94—*copallinum*, (sumach) petioles winged. ♀.—*vernix*, (poison sumach) glabrous panicle few-flowered: ♀.—*glabrum*, glabrous, panicle dense. ♀

—*typhhinum*, hairy. $\frac{1}{2}$. —*radicans*, (poison ivy) parasitic. $\frac{1}{2}$.

SAROTHRA. Calyx 5-parted : capsule 1-celled, 3-valved, coloured. 20. 82—*gentianoides*, (pine-weed) leaves minute, close-pressed. γ .

ALSINE. Calyx 5-leaved : petals equal : capsule 1-celled, 3-valved, many-seeded ; having a free central columella. 22. 82—*media*, (chick-weed) stem procumbent, leaves long-ovate. ☉. w.

* Euphorbia.

ORDER IV. TETRAGYNIA.

PARNASSIA. Calyx 5-parted : corol 5-petalled : nectaries 5 : heart-form, ciliate, with globular tips : capsule 4-valved, 2-celled : seed membranaceous-margined. 14. 64. $\frac{1}{4}$.—*caroliniana*, (parnassus-grass) leaves radical, roundish.—*asarifolia*, radical leaves kidney-form. $\frac{1}{4}$.

ORDER V. PENTAGYNIA.

ARALIA. Umbellets involucred : perianth 5-toothed, superior : petals 5 : berry crowned, 5-celled ; cells 1-seeded. 46. 59.—LEAVES TERNATE—*racemosa*, (spikenard) stem branching. $\frac{1}{4}$. w.—*nudicaulis*, (wild sarsaparella) scape with umbels. $\frac{1}{4}$. w.—LEAVES PINNATE—*hispida*, umbelled. w.—*spinosa*, paniced. $\frac{1}{2}$. w.

LINUM. Calyx 5-leaved : corol 5-petalled : capsule 5-valved, 10 celled : seeds solitary : filaments thickening at the base. 14. 73—*usitatissimum*, (flax) calyx-leaves 3-nerved. ☉. b. e.—*virginianum*, radical leaves ovate. γ .

DROSERA. Calyx 5-cleft : corol 5-petalled : capsule 1-celled, 3 to 5-valved at the top, seeds many. (Sometimes 6-styled. The leaves are always beset with glandular hairs resembling dew.) 14. 64—*rotundifolia*, (sundew) leaves orbicular. w.—*longifolia*, leaves obovate.

STATICE. Calyx 1-based, entire, plaited, scarious, inferior : corol 5-petalled : seed 1. 48. 35—*limonium*, (marsh-rosemary) leaves obovate, mucronate. $\mathcal{U}$. b.

* *Spergula*, *Cerastium*.

ORDER XIII. POLYGYNIA.

XANTHORHIZA. Calyx 0 : petals 5 : nectaries 5, pedicelled : capsules 1-seeded, about 5 in number. 26. 61—*aprifolia*, (yellow root) leaves pinnate. $\mathcal{h}$.

CLASS VI. HEXANDRIA.

ORDER I. MONOGYNIA.

A. *Flower with a perianth and corol, without a spathe.*

TRADESCANTIA. Calyx inferior, 3-leaved : corol 3-petalled : filaments with jointed heads : capsules 3-celled. 6. 13—*virginica*, (spiderwort) leaves lanceolate, umbels terminal. $\mathcal{U}$. b. e.

BERBERRIS. Calyx inferior, 6-leaved : petals 6, with 2 glands at the claw of each : style 0 : berry 1-celled, 2-seeded. (Stigma navelled : stamens spring up on being irritated.)—*canadensis*, (barberry) branches dotted, thorns in threes, flowers racemed. $\mathcal{h}$. y.

CAULOPHYLLUM. Calyx inferior, 6-leaved : petals 6, opposite to the leaves of the calyx : drupe 1-seeded : anther 2-celled, gaping at the margin. 24. 78—*thruictroides*, (poppoose-root) leaves more than decompound. $\mathcal{U}$. y-g.

PRINOS. Calyx inferior, 6-cleft : corol wheel-form, 6-cleft ; berry 6-seeded. 43. 95—*verticillatus*, (winter-berry) leaves obovate-lanceolate, acuminate. (Berries red, permanent.) $\mathcal{h}$. w.—*glaber* ? leaves wedge-lanceolate, obtusish, glabrous. $\mathcal{h}$.

CLEOME. Calyx 4-leaved : petals 4, ascending : glands 3, one at each sinuate division of the calyx

except the lowest: stamens from 6 to 20, or more: capsule silique-like, 1-celled, 2-valved. Tetradynamous. 25. 64—*dodecandra*, (false-mustard) leaves ternate, stamens 10 to 14. ☼. w.

FLOERKEA. Calyx 3-leaved, corol 3-petalled: style 2-cleft: capsule bladder-like, 2-grained. 15. 22—*proserpinacoides*, (false-mermaid) peduncles long, solitary. ☼. g-y.

B. *Flowers with a spathe or glume, without a perianth.*

AMARYLLIS. Corol superior, 6-petalled, unequal: filaments unequal in proportion or direction, declined, inserted in the throat of the tube. 9. 17—*atamasco*, (atamask lily) corol liliaceous, stamens declined. 2. r.

HYPOXIS. Glume-like spathe 2-valved: corol superior, 6-parted, permanent: capsule elongated, narrow at the base: seed roundish. 10. 17—*erecta*, (star grass) scape 2 to 4-flowered. 2. y.

ALLIUM. Spathe many-flowered: petals inferior, ovate, spreading, sessile. (Flowers in close umbels or heads.) 9. 16—*porrum*, (leek) umbelliferous, leaves flat. 2. —*ascalonicum*, (eschallots) umbelliferous, leaves awlform. 2. e.—*triccum*, (garlic) umbelliferous, scape half-terete. 2. —*cepa*, (onion) scape bulging, longer than the terete leaves. 2. e.—*schoenoprasium*, (chives) scape and leaves terete, nearly equal. 2. e.—*sativum*, (common garlic) bulb-bearing, leaves flat. 2. e.—*canadensis*, (wild onion) bulb-bearing, leaves linear. 2.

GALANTHUS. Petals 3, concave, superior: nectaries 3, small, emarginate: stigma simple. 6. 17—*nivalis*, (snow-drop) leaves linear, keeled radical; flowers single. 2. w.

NARCISSUS. Petals 6, equal, superior: nectary bell-form, 1-leafed, including the stamens. 9. 17—

jonquilla, (jonquil) petals thrice as long as nectary. 24. e.—*pseudo-narcissus*, (daffodil) petals equalling nectaries. 24. e.

PONTEDERIA. Corol inferior, 6-cleft, 2-lipped : capsule fleshy, 3-celled, many-seeded : three stamens commonly inserted on the tip, and three on the tube, of the corol. 6. 17—*cordata*, (pickerel weed) leaves heart-oblong. 24. b.

C. *Flowers without spathe, perianth or glume.*

AGAVE. Corol erect, superior, tubular, or funnel-form : filaments erect, longer than the corol : capsule triangular, many-seeded. 10. 15—*virginica*, (agave) stemless, leaves serrate, scape simple 24. g-y.

ALETRIS. Corol superior, funnel-form, wrinkled, somewhat 6-cleft ; with the stamens inserted on the base of its divisions : capsule 3-celled, many-seeded, half-inferior when mature. 10. 16—*aurea*, (false aloe) flowers spiked, nearly sessile, corols rough, leaves lance-sword-form. 24. y-w.

HEMEROCALLIS. Corol 6-parted, tubular-funnel-form : stamens declined : stigma small, simple. 10. 17—*flava*, (day lily) segments of corol acute. 24. y-e.—*fulva*, 3 inner segments of corol obtuse. 24. y-e.

DRACAENA. Corol inferior, 6-parted ; or 6-petalled cohering at the base : filaments somewhat thickened in the middle : berry with 3 one-seeded cells. 11. 12—*borealis*, (dragoness plant) nearly stemless, leaves oval. 24. w.

CONOSTYLUS. Corol more than half-inferior, 6-cleft, permanent, with branching hairs : anthers erect : style conic, 3-parted : stigma simple : capsule opening at top, 3-celled, many-seeded.—*americana*, corol woolly within, scape corymb-panicked, leaves grass-sword-form. Discovered in New-Jersey by Pursh.

ERYTHRONIUM. Corol liliaceous, inferior, 6-petalled; petals reflexed, having 2 tubercle-form nectaries at the base of the three inner alternate petals. 11. 14—*dens-canis*, (dog-tooth violet, or adder-tongue) scape naked, leaves 2, glabrous spotted. 2. y.

ASPARAGUS. Corol superior, 6-parted, erect; the three inner petals reflexed at the apex: berry 3-celled; many-seeded. 11. 12—*officinalis*, (asparagus) leaves fascicled, bristle-form. 2. y. e.

HYACINTHUS. Corol roundish or bell-form, equal 6-cleft: 3 nectariferous pores at the top of the germ: stamens inserted in the middle of the corol: cells somewhat 2-seeded. 10. 16—*botryoides*, (grape hyacinth) corol globular, leaves channelled. 2. b.—*orientalis*, (garden hyacinth) corol funnel-form, leaves keeled. 2.

LILIUM. Corol inferior liliaceous 6-petalled; petals with a longitudinal line from the middle to the base: capsule with the valves connected by hairs crossing as in a sieve. 10. 14—*philadelphicum*, (red lily) flowers about 2 or 3, erect; leaves mostly whorled. r-y.—*canadense*, (yellow lily) flowers pendant, leaves whorled. y.—*superbum*, (superb lily) leaves whorled below; scattered above; flowers pendant revolute. y.

TULIPA. Corol 6-petalled, liliaceous: style none. 10. 14—*suaveolens*, (tulip) petals obtuse, stem hairy. e.—*gesneriana*, petals obtuse, stem glabrous. e.

CONVALLARIA. Corol inferior 6-cleft: berry 3-celled, spotted before ripening. 11. 12—*racemosa*, (clustered solomon-seal) corol wheel-form, raceme terminal, leaves alternate sub-sessile. 2. w.—*multiflora*, peduncles axillary, leaves alternate somewhat clasping. 2. w.—*bifolia*, tetrandrous; corol wheel-form, 4-cleft, leaves 2 heart-ovate. 2. w.

UVULARIA. Corol inferior, 6-petalled, with a

nectariferous hollow at the base of each petal : filaments very short. 11. 14—*perfoliata*, (bellwort) leaves perfoliate. 2. y.—*sessilifolia*, leaves sessile, lance-ovate. 2. y.

ORONTIUM. Receptacle spadix-like, cylindric, covered with florets : spathe 0 : corol 6 petalled, naked : style 0 : follicle 1-seeded. 2. 7—*aquaticum*, (floating arum) leaves lance-ovate, glabrous, tapering base. 2. y.

NARTHECIUM. Corol 6-petalled, inferior, spreading, permanent : filaments thread-form, hairy : capsule prismatic : seed appendaged at both ends. 10. 16—*americanum*, (false asphodel) having a clasping bract. 2. y.

ORNITHOGALUM. Corol 6-petalled, erect, permanent, spreading above the middle : filaments dilated or subulate at the base : capsule roundish, angled, 3-celled : seed roundish, naked. 10 16—*umbellatum*, (star of Bethlehem) peduncles longer than bracts, corymbs few-flowered. 2. w.

ACORUS. Receptacle spadix-like, cylindric, covered with florets : corol 6-petalled) naked : corol 0 : capsule 3-celled. 2. 7—*calamus*, (sweet flag) spike projecting from the side of a sword-form leaf. 2.

D. *Flowers without corol.*

JUNCUS. Glume 2-valved : calyx 6-leaved, permanent : stigmas 1 or 3-celled, 3-valved, many-seeded. 5. 13—*tenuis*, (rush grass) leaves channeled, panicle cymed. 2.—*sylvaticus*, leaves flat, hairy, panicle cymed. 2.—*campestris*, leaves flat, hairy, spikelets terminal. 2. (Very small.)—*effusus*, (bull-rush) culm round, smooth, panicle lateral. 2.

* *Trientalis*, *Polygonum*, *Laurus*, *Corydalis*.

ORDER II. DIGYNIA.

ORYZA. Calyx, glume 2-valved, 1-flowered :

corol 2-valved, adhering to the seed. 4. 10—*sativa*, (rice) culm jointed, leaves clasping, panicle terminal ☺. e.

* *Ulmus*.

ORDER III. TRIGYNIA.

MEDEOLA. Calyx 0 : corol deeply 6-parted, revolute : berry 3-seeded. 11. 12—*virginica*, (Indian cucumber) leaves in distant whorls. 24. w.

MELANTHIUM. Polygamous. Calyx 0 : corol wheel-form, 6-parted or 6-petalled, each part with 2 glands at the base : stamens from the lengthened claws of the petals : capsule ovate, somewhat 3-cleft at the apex, 3-celled : seeds membrane-winged. numerous. 10. 13—*virginicum*, (black-flower) flowers panicked, petals oval. 24. y.

VERATRUM. Polygamous. Calyx 0 : corol 6-petalled, without glands : capsules 3, many-seeded. (The staminate flowers have the rudiment of a pistil.) 10. 13—*viride*, (itchweed, or swamp hellebore) panicle decompound, leaves nerved. 24. g.—*luteum*, (white hellebore) raceme simple. 24. w.

HELONIAS. Calyx 0 : corol 6-petalled : styles distinct : capsules 3-celled, 3-horned, few-seeded. 10. 13—*latifolia*, (helonias) leaves lance-awlform, scape nearly leafless, spike short. 24. p.

SCHEUCHZERIA. Calyx 6-parted inferior : corol 0 : anthers linear : stigmas sessile, lateral : capsules 3, inflated, 1 or 2-seeded. (Sometimes the calyx is taken for the corol.) 5. 13—*palustris*, (less flowering-rush) capsules 3, 5, or 6, stigmas lateral.

ZIGADENUS. Calyx 6-leaved, spreading. with 2 glands above the narrow base of each leaf : stamens inserted in contact with the germ : capsules membranaceous, 3-celled, many-seeded. (Sometimes the calyx is taken for the corol.)—*glaberrimus*.

mus. (zigadene) leaves lance-linear, narrow, long.
 24. b

TRILLIUM Calyx 3-leaved, inferior, spreading: corol 3-petalled: berry 3-celled, many-seeded. 11. 12—*cernuum*, (wake-robin) flowers peduncled, pendant. p-w.—*rhomboideum*, flowers peduncled, erect or erectish; Var. *erectum*, *album*, and *grandiflorum* p. or w.

TRIGLOCHIN. Calyx 3-leaved, inferior; corol 3-petalled, resembling the calyx: stigmas sometimes 6: capsules dehiscent at the base. 5. 13—*maritimum*, (arrow-grass) capsule 6-celled, grooved.

RUMEX. Calyx 3-leaved: petals 3, converging; stigma many-cleft: seed 1, naked, three-sided. 12. 28—*crispa*, (dock) valves ovate entire, all bearing grains. 24.—*obtusifolia*, valves toothed, mostly bearing grains. 24.—*aquatica*, valves ovate entire, grains obsolete. 2.—*britannica*, valves entire, all bearing grains, leaves obsoletely sheathed. 24.—*acetosella*, (sorrel) leaves hastate. 24.

ORDER XIII. POLYANDRIA.

ALISMA. Calyx 3-leaved: petals 3: capsules numerous, 1-seeded. 5. 13—*plantago*, (water-plantain) leaves heart-ovate. 24. w.

CLASS VII. HEPTANDRIA.

ORDER I. MONOGYNIA.

TRIENTALIS. Calyx 7-leaved: corol 7-parted, equal, flat: berry juiceless: number of stamens variable. 20. 34—*europaica*, (chick-wintergreen) leaves lanceolate, clustered at the top. 24. w.

ÆSCULUS. Calyx inflated, 4 or 5-toothed: corol 4 or 5-petalled, inserted on the calyx, unequal, pubescent: capsule 3-celled: seeds large, chestnut-form. 23. 66—*hippocastanum*, (horse-chestnut) leaves 7-fringed, corol 5-petalled. 2. c.

CLASS VIII. ORDER I.

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ORDER IV. TETRAGYNIA.

SAURURUS. Calyx an ament with 1-flowered scales: corol 0: germs 4: berries 4, 1-seeded. 2. 6—*cernuus*, (lizard-tail) scales of the ament petiolated, many-spiked. 24.

* *Polygonum orientale*.

CLASS VIII. OCTANDRIA.

ORDER I. MONOGYNIA.

A. Flowers superior.

OXYCOCCUS. Calyx superior 4-cleft: corol 4-parted, the divisions nearly linear, revolute: filaments converging, anthers tubular, 2-parted: berry many-seeded. 18. 51—*vulgaris*, (cranberry) stem creeping, leaves acutish, revolute. 2. r-w. —*macrocarpus*, stems rising, leaves obtuse, flat. 2.

GAURA. Calyx 4-cleft, tubular: corol 4-petalled, ascending towards the upper side: nut 1-seeded. 17. 88—*biennis*, (virginian loosestrife) leaves lanceolate, toothed. 8. r.

EPILOBIUM. Calyx 4-cleft, tubular: corol 4-petalled: capsule oblong and of great length: seeds feathered. 17. 88—*palustre*, (willow-herb) stem teretes, leaves lanceolate toothletted. 2. r. —*tetragonum*, stem grooved—4-sided, leaves serrulate. 2. r.—*angustifolium*, leaves lance-linear, entire, scattered. 2. p-b.

OENOTHERA. Calyx 4-cleft, tubular, caducous, divisions deflected: petals 4, inserted on the calyx: stigma 4-cleft: capsule 4-celled, 4-valved: seeds not feathered. 17. 88—*biennis*, (scabish, or tree-primrose) leaves lance-ovate, stamens shorter than corol. Large. 8. y.—*humila*, leaves entire, obtuse, capsule obovate. Small. 2. y.

B. Flowers inferior.

RHEXIA. Calyx pitcher-form, 4 or 5-cleft: pe-
E

tals 4, oblique, inserted on the calyx: anthers declined: capsule 4-celled, within the calyx, setose: seeds numerous, cochleate. 17. 90—*virginica*, (deer-grass) leaves 3-nerved, ciliate-serrate. 24. p.

ACER. Polygamous. Calyx 5-cleft: corol 4 or 5-petalled: samaras 2, united at the base, 1-seeded. 23. 66—*saccharinum*, (sugar-maple) leaves acuminate-toothed, 5-lobed-palmate, sinuate, base sub-cordate. 2. y.—*rubrum*, (soft-maple) leaves sub-5-lobed, gash-toothed, unequally. 2. r.

JEFFERSONIA. Calyx 5-leaved, coloured, caducous: corol 8-petalled: capsule obovate, sub-peduncled, 1-celled, dehiscent below: seeds many, oblong, arilled at the base—*diphylla* (twin-leaf) stemless, peduncle naked, 1-flowered. 24. w.

DIRCA. Calyx 0: corol tubular, limb obsolete, unequal: stamens longer than the tube of the corol: berry, or drupe, 1-seeded. (The corol may be taken for a coloured calyx.) 31. 25—*palustris*, (leatherwood) leaves oval, flowers axillary, 2 or 3 in a hairy bud-like involucre. 2. w.

TROPOEOLUM. Calyx 4 or 5-cleft, coloured, spurred: petals 4 or 5, unequal: nuts leathery, sulcate. 23. 73—*majus*, (nasturtion) leaves peltate. 24. y. e.

* *Chrysosplenium* varies into the 2d order of this class.

ORDER III. TRIGYNIA.

CARDIOSPERMUM. Calyx 4-leaved: petals 4: nectary 4-leaved, unequal: capsules 3, connate, inflated. 23. 65—*halicacabum*, (heart-seed) climbing, leaflets gash-lobed. 2. w.

POLYGONUM. Calyx inferior, 5-parted, coloured: corol 0: seed 1, angular, covered with the calyx. (Stamens and pistils vary in number—The calyx in some species might be taken for a corol.) 12. 28—*aviculare*, (knotgrass) flowers axillary,

stem procumbent. ☉. w.—*hydrophiper*, (water-pepper) stamens 6, styles 2; spike filiform, nodding, leaves spotless. ☉. w-p.—*persicaria*, (persicaria) stamens 6, styles 2, peduncles smooth, stipules ciliate. ☉. w-p.—*pensylvanicum*, styles 2, peduncles bristly, stipules not ciliate. ☉. p.—*scandens*, climbing, leaves cordate. 2. w.—*convolvulus*, twining, leaves heart-arrowform. ☉. w.—*arifolium*, stem prickly, leaves hastate. 2. r.—*virginicum*, stamens about 5, styles 2, coloured calyx 4-cleft, leaves broad-ovate ciliate. 2. w.—*maritimum*, flowers axillary, stem erect. w.—*sagittatum*, stem decumbent, prickly, leaves arrow-form. ☉. w-p.—*orientale*, stamens 7, styles 2, leaves broad-ovate, stipules hairy. Very tall. ☉. r. e.—*fagopyrum*, (buckwheat) stem smooth, branching. e.

CLASS IX. ENNEANDRIA.

ORDER I. MONOGYNIA.

LAURUS. Calyx 4 to 6-parted: corol o: nectar-ies 3, two-bristled glands, surrounding the germ: drupe 1-seeded. (Stamens vary from 3 to 14—often diœcious—The calyx may be taken for a corol.) 12. 27—*sassafras*, (sassafras) leaves 3-lobed and simple. 2. y.—*benzoin*, (spice-bush) leaves simple, acute both ends. 2. y.

ORDER III. TRIGYNIA.

RHEUM. Calyx none: corol 6-cleft, permanent; seed 1, 3-sided. 12. 28—*palmatum*, (rhubarb) leaves palmate roughish. e.

CLASS X. DECANDRIA.

ORDER I. MONOGYNIA.

A. *Flowers many-petalled, irregular.*

PODALYRIA. Calyx 5-cleft, somewhat 2-lipped; corol papilionaceous, wings of the length of the

banner: legume inflated, smooth, many-seeded. 32. 93—*tinctoria*, (wild indigo) stipules obsolete, leaves wedge-form. 24. y.—*australis*, stipules twice as long as petiole. 24. b.

CERCIS. Calyx 5-toothed, gibbous below: corol papilionaceous, banner under the wing, short: legume oblong. 33. 93—*canadensis*, (judas-tree) leaves cordate. 2. r.

CASSIA. Calyx 5-leaved: corol 5-petalled: anthers, 3 lower ones beaked: legume membranaceous. 33. 93—*chamaecrista*, (cassia) pinnate leaflets many-paired. 20. y.—*marilandica*, pinnate leaflets 8-paired. 24. y.

RHODORA. Calyx 5-toothed: corol 3-petalled: stamens declined: capsule 5-celled. 18. 50—*canadensis*, (rhodora) umbelled, leaves oval entire. 2. r.

B. Flowers 5-petalled, regular.

CLETHRA. Calyx 5-parted, permanent: style permanent: stigma 3-cleft: capsule 3-celled, 3-valved, surrounded by the calyx. (Spiked) 18. 51—*alnifolia*, (sweet pepper-bush) leaves obovate, serrate. 2. w.

PYROLA. Calyx 5 parted: anthers with 2 pores: capsule 5-celled, dehiscent at the angles. 18. 51—*umbellata*, (bitter wintergreen) peduncles umbel-corymbed, leaves lance-obovate. 24. w.—*maculata*, peduncles 2-flowered, leaves lance-ovate, whitish near the midrib. 24. w.—*secunda*, raceme many-flowered turned to one side, leaves ovate serrulate. 24. w.—*rotundifolia*, (shin-leaf) raceme many-flowered, leaves round. 24. w.

Ruta. Calyx 5-parted: petals concave: receptacle surrounded by 10 nectariferous dots: capsule lobed. (Petals sometimes 4, and stamens 8.) 26. 81—*graveolens*, (rue) leaves decom-pound or more, petals entire.

DIONAEA. Calyx 5-leaved : stigma fringed : capsule 1-celled, gibbous : seeds numerous. (Petals sometimes 6.) 14. 73—*muscipula*, (Venus' fly-trap) radical leaves with a terminal appendage resembling a rat-trap. 24. w.

C. *Flowers 1-petalled.*

ANDROMEDA. Calyx 5-parted, inferior : corol ovate or roundish, with a 5-cleft reflexed mouth : capsule 5-celled, with partitions contrary. (Stamens sometimes 8.) 18. 51.—*paniculata*, (white-bush) corols roundish, panicled, leaves lance-obovate, stem whitish crack-barked. 2. w.—*calyculata*, (leather-leaf) racemes one-sided, leafy, leaves lance-oblong, dotted. 2. w.

RHODODENDRON. Calyx 5-parted : corol somewhat funnel-form and oblique : stamens declining : capsule 5-celled, 8. 50—*maximum* (rosebay) corol wheel-form, umbel dense terminal : leaves paler beneath. 2. r.

KALMIA. Calyx 5-parted : corol wheel-salverform, with 10 horns beneath and 10 cavities within : capsule 5-celled. 18. 50—*latifolia*, (broad-leaf laurel) corymbs terminal, leaves leathery ovate-oval. 2. w-r.—*angustifolia*, (narrow-leaf laurel) corymbs lateral, plant small. 2. r.

VACCINIUM. Calyx 5-toothed or 5-parted : corol bell or pitcher-form, 5-cleft, the divisions reflected : filaments inserted on the germ with the corol : berry 4 or 5-celled, many-seeded. (The foreign species are sometimes octandrous.) 18. 51—*corymbosum*, (whortleberry) corymbs bracted, corol sub-cylindric, leaves pubescent beneath. 2. w-p.—*resinosum*, racemes bracted, corol ovate, leaves sprinkled with resinous dots. 2. p.—*tenellum*, raceme sessile, leaves smoothish, serrulate, oboval. 2. w.

EPIGAEA. Calyx double, outer 3-leaved, inner 5-parted: corol salver-form; capsule 5-celled, many-seeded. 18. 51—*repens*, (trailing arbutus) leaves heart-ovate, stem creeping. $\frac{1}{2}$. w-r.

GUALTHERIA. Calyx inferior, double, outer 2-leaved, inner 5-cleft: corol ovate; capsule 5-celled, invested with the inner, berried calyx: nectary 10-pointed. 18. 51—*procumbens* (spicy winter-green) leaves obovate. $\frac{1}{2}$. w.

ARBUTUS. Calyx inferior, 5-parted: corol ovate, pellucid at the base: berry 5-celled. 18. 51—*uva-ursi*, (bear-berry) leaves wedge-obovate, stem procumbent. $\frac{1}{2}$. r.

LEDUM. Calyx 5-cleft: corol flat, 5-parted: capsule 5-celled, dehiscent at the base. (Stamens sometimes 5.) 18. 50—*latifolium*, (labrador-tea) leaves oblong, downy beneath, stamens about 5. $\frac{1}{2}$. w.—*buxifolium*, leaves ovate, glabrous, corymbs terminal. $\frac{1}{2}$. w.

D. Calyx none.

MONOTROPA. Corol 10-petalled: 5 outer with nectariferous hollows at the base: capsules 5-valved. (A fifth part of the carpogeneration sometimes wanting.)—*lanuginosa*, (beech-drops) flowers spik-ed, woolly. w. Whole plant yellowish white.—*uniflora*, (bird's nest) stem 1-flowered. w. Whole plant ivory white.

* Geranium, Rhexia, Pertulacca, Lythrum.

ORDER II. DIGYNIA.

HYDRANGEA. Calyx 5-toothed, superior: corol 5-petalled: capsule 2-celled, 2-beaked, dehiscent between the beaks. 13. 85—*arborescens*, (hydrangea) stamens 8 to 10, leaves oblong-ovate, toothed. $\frac{1}{2}$. w. Vid. Hortensia.

SAXIFRAGA. Calyx 5-parted: corol 5-petalled: capsule 1-celled, 2-beaked; many-seeded. 13. 84—*vernalis*, (early saxifrage) leaves oval crenate.

24. w.—*pensylvanica*, leaves lance-oblong, toothed.
24. w.

TIARELLA. Calyx 5-parted: corol inserted on the calyx; 5-petalled, petals entire: capsule 1-celled: 2-valved, 1 valve larger. 13. 84—*cordifolia*, (mitre-wort) leaves cordate, petals longer than the calyx. 24. w.

MITELLA. Calyx 5-cleft: petals 5 on the calyx pinnatifid: capsule 1-celled, 2-valved, valves equal. 13. 84—*diphylla*, (false sanicle) leaves cordate, scape-like stem 2-leaved. 24. w.

CHRYSOSPLENIUM. Calyx 4 or 5-cleft, half-superior, coloured: corol o: capsule 2-beaked; 1-celled, many-seeded. (Lateral flowers 8-stamened.) 13. 86—*oppositifolium*, (golden saxifrage) leaves opposite, heart-form, crenate. 24.

DIANTHUS. Calyx inferior, cylindrical, 1-leafed, with 4 to 8 scales at the base: petals 5 with claws: capsule cylindrical, 1-celled, dehiscent at the top. 22. 82—*caryophyllus*, (pink) petals crenate-lobed, scales of calyx ovate acute. 24. r.—*plumarius*, petals many-cleft, scales of calyx ovatis. 24. r-w.—*barbatus*, (sweet-william) flowers aggregate, scales of the calyx as long as the tube. 24.

SAPONARIA. Calyx inferior; 1-leafed, tubular, without scales: petals 5, with claws: capsule oblong, 1-celled. 22. 82—*officinalis*, (soap-wort) calyx cylindric, leaves lance-oval. ☺. r.—*vaccaria*, calyx conic, 5-angled, leaves ovate sessile. ☺. r.

SCLERANTHUS. Calyx inferior, 1-leafed: corol o: seeds 1 or 2 inclosed in the calyx: stamens inserted on the calyx. 22. 86—*annuus*, (knavell) stem spreading, calyx becoming sharp-toothed. ☺. g.

ORDER III. TRIGYNIA.

ARENARIA. Calyx inferior, spreading, 5-leaved: petals 5, entire: capsule 1-celled, many-seed-

ed. 22. 82—*lateriflora*, (sandwort) stem simple, corol longer than calyx. 24. w.—*serpyllifolia*, stem branched, corol shorter than calyx. 3. w.—*stricta*, leaves linear-subulate, calyx striate. 24. y.—*canadensis*, stem prostrate glabrous, stamens 5, capsule globose. ☉. r.

STELLARIA. Calyx 5-leaved, inferior, spreading: petals 5, deeply cleft, mostly to the claw, spreading: capsule ovate, 1-celled, many-seeded, 6-toothed at the top. 22. 82—*pubera*, (starwort) petals longer than calyx, leaves sessile ovate ciliate. 24. w.—*alsine*, petals shorter than calyx, stem decumbent. w.

SILENE. Calyx 1-leaved, inferior, conic: petals 5, with claws appendaged at the mouth: capsule imperfectly 3-celled. 22. 82—*pensylvanica*, (catch-fly) viscid-pubescent, root-leaves wedge-form, stem-leaves lanceolate. w-r.—*virginica*, panicle forked, calyx downy and cylindric when in flower. 24. w-p.—*antirrhina*, peduncles 3-cleft, petals emarginate, leaves lanceolate. ☉. w.

CUCUBALUS. Calyx inferior, 1-leaved, bell-form, inflated: petals 5 with claws, not appendaged at the mouth: capsule 3-celled. 22. 82—*stellatus*, (bladder-campion) leaves in fours, petals many-cleft. 24. w.—*behen*, stem forked, calyx bladder-like. 24. w.

HORTENSIA. Flowers deformed: florets solitary: calyx 5-toothed, minute: corol 5-petalled. The gay flowers composing the cyme, have a large coloured, permanent petal-like 5-leaved calyx, and a minute caducous 4 or 5-petalled corol: stamens 8, 10 or 11. 13. 85—*speciosa*, (changeable hydrangea) leaves broad-ovate, tapering to both ends, serrate, cymed. g-r. This is the plant so common in flower pots, improperly called hyder-india.

ORDER V. PENTAGYNIA.

SEDUM. Calyx inferior 5-cleft: petals 5: 5 nectariferous scales at the base of the germ: capsules 5. 13. 83—*telephium*, (liveforever, or orpine) leaves tooth-serrate, stem erect, corymb leafy. 24. e.—*portulacoides*, creeping, leaves round-spatulate. 2. w-e.—*anacampseros*, (stonecrop) decumbent, leaves wedge-form. e.

PENTHORUM. Calyx 5-10-cleft: petals 5 or 0: capsule 5-cuspidate, 5-celled. 13. 83—*sedoides*, (Virginia orpine) stem angular, leaves serrate, alternate. 24. y.

OXALIS. Calyx 5-leaved inferior: petals 5, cohering by the claws: capsule 5-celled, 5-cornered, dehiscent at the corners: stamens, with 5 shorter: outer ones adhering at their bases. 14. 73—*violacea*, (wood sorrel) stemless, scape 2-cleft, umbelled. 24. p.—*acetosella*, stemless, scape 1-flowered, root granular. 24. w-p.—*dillenii*, stem erect, peduncles as long as leaves. ☺. y.—*stricta*, stem erect, peduncles shorter than the leaves. y.—*corniculata*, stem decumbent, rooting. ☺. y.

SPERGULA. Calyx 5-leaved inferior: petals 5, entire: capsule ovate 1-celled, 5-valved. (Stamens often 5.) 22. 82—*arvensis*, (corn-spurry) leaves in whorls, peduncles reflexed in maturity, seed kidney-form. ☺. w.—*saginoides*, leaves opposite, linear, smooth, awnless, stem decumbent, flowers pentandrous. Persoon asks whether this is not a variety of *sagina procumbens*. Professor Ives considers all the American species of *spargula* and *sagina*, as a natural assemblage of plants, which ought to be united in one genus.

AGROSTEMMA. Calyx 1-leaved coriaceous: petals 5 with claws, border obtuse, entire: capsule 1-celled, many-seeded. 22. 82—*githago*, (cockle) bristly, petals entire. ☺. r.—*coronaria*, (rose-cockle) downy, petals emarginate. ♂. r.

CERASTIUM. Calyx 5-leaved : petals 5, 2-cleft : capsule 1-celled, dehiscent at top, tooth-like. 22. 82—*vulgatum*, (mouse-ear chickweed) petals equaling the calyx, plant hirsute. w.—*viscosum*, viscid, petals hardly longer than calyx. w.—*semidecandrum*, pentandrous, petals shorter than calyx. w.

LYCHNIS. Calyx 1-leaved, oblong, smooth : petals 5, with claws : the limb somewhat 2-cleft : capsule 1 or 5-celled. 22. 82—*chalcedonica*, (campion) flowers in fastigate heads. $\frac{1}{2}$. e.

* *Phytolacca*.

ORDER X. DECAGYNIA.

PHYTOLACCA. Calyx 0 : corol 5-petalled, calyx-like, inferior : berry 10-celled, 10-seeded. 54. 89—*decandra*, (pokeweed) leaves ovate acute, racemes simple. $\frac{1}{2}$. w. berries red.

CLASS XI. DODECANDRIA:

ORDER I. MONOGYNIA.

ASARUM. Calyx 3 or 4-cleft, superior : corol 0 : stigma 6-cleft : capsule coriaceous, crowned with the calyx. 11. 23—*canadense*, (wild ginger, or white snake-root) calyx reflexed, leaves in pairs, heart-renaliform. $\frac{1}{2}$. p. root aromatic.—*virginicum*, leaves solitary, glabrous, cordate. $\frac{1}{2}$.

HUDSONIA. Calyx tubular, 3-leaved, inferior : corol 5-petalled : stamens 15 : capsule 1-celled, 3-valved, 3-seeded. 18. 51—*ericoides*, (false-heath) leaves subulate-needle-form, hirsute, peduncles solitary, filiform. $\frac{1}{2}$. y.

PORTULACCA. Calyx 2-cleft, inferior : corol 5-petalled : capsule 1-celled, opening transversely : columella 5, filiform. 13. 86—*oleracea*, (purslane) leaves wedge-form, succulent, flowers sessile. $\odot$. y.

LYTHRUM. Calyx 6, 8, 10 or 12-toothed, inferior : petals 5 or 6 on the calyx : capsule 2-celled,

many-seeded, covered. 17. 91—*verticillatum*, (milk-willowherb) flowers whorled, leaves opposite, generally in threes, lanceolate. 24. p.

DECUMARIA. Calyx 10-leaved, superior : corol 10-petalled : capsule about 8 or 10-celled, seeds numerous. 19. 89—*sarmentosa*, (decumary) stem sarmentose, lower leaves round, upper ones lance-ovate. 1/2. w.

TALINUM. Calyx inferior, 2 or 5-leaved : corol 5-petalled : capsule 1-celled, 3-valved, many seeded, seeds arillate : columella globose—*teretifolium*, (taliny) leaves cylindric, flesh ycorymbs terminal. 24. p.

ORDER II. DIGYNIA.

AGRIMONIA. Calyx 5-toothed, invested with an outer one : petals 5 : seeds 2, in the bottom of the calyx. 35. 92—*eupatoria* (agrimony) leaves interruptedly pinnate. 24. y.

* Delphinium.

ORDER III. TRIGYNIA.

EUPHORBIA. Calyx 1-leaved, inflated : petals 4 or 5, standing on the calyx : capsule 3-grained. 38. 96—*maculata*, (spotted spurge) stem prostrate, forked, leaves hairy spotted. ☹. w.—*helioscopia*, (sun spurge) umbel 5-rayed, then 3-rayed, forked, leaves wedge form. ☹.—*polygonifolia*, (knot spurge) leaves entire, stem decumbent. 24.

RESEDA. Calyx 1-leafed, 4 to 6-parted : petals in many divisions : capsule 1-celled, dehiscent at the top : seed reniform (stamens 11 to 15 : styles 3, 5, or none) 54. 64—*odorata*, (mignonette) leaves entire and 3-lobed, calyx long as petals, styles often. 24. y. e.—*luteola*, (dyers' weed) leaves lanceolate, entire, flat, calyx 4-cleft. Found growing wild near New-Haven, by professor Ives.

ORDER XIII. POLYGYNIA.

SEMPERVIVUM. Calyx 9 to 12-parted : petals 8 to 12 : capsules 12, many-seeded. (Stamens 16 or 20.) 13. 83—*tectorum*, (house leek) leaves ciliate, offsets spreading. 24.—*arboreum*, branched woody. h.

CLASS XII. ICOSANDRIA.

ORDER I. MONOGYNIA.

PHILADELPHUS. Calyx 4-5-parted, superior : corol 5-petalled : style 4-cleft : capsule 4-5-celled, many-seeded ; seed arilled. 19. 89—*coronarius* (false syringa, or mock orange) leaves slightly toothed. h. w.

PRUNUS. Calyx 5-cleft, inferior : corol 5-petalled : nut of the drupe smooth with prominent seams at the sutures. 36. 92—*borealis*, fruit ovate, umbels sub-corymbed, sessile, few-flowered, leaves acuminate, petioles with 2 glands. h. w.—*virginiana*, (wild cherry) flowers in erect compact racemes, leaves doubly-toothed, petioles with about 4 glands. h. w.—*serotina* (choak-cherry) racemes lax, serratures simple, lower ones sub-glandular. h. w.—*cerasus* (common cherry) umbels sub-sessile, leaves lance-ovate. h. w. e.—*domestica*, (common plum) peduncles sub-solitary, leaves lance-ovate. e.

CACTUS. Calyx superior, 1-leafed, imbricate : petals numerous, in many series, the inner ones larger ; stigma many-cleft : berry 1-celled, many-seeded, navelled. 13. 85—*opuntia*, (prickly pear) nearly stemless, leaves very thick, succulent and proliferous. y.

MYRTUS. Calyx superior, 5-cleft : petals 5 : berry 2 or 3-celled, many-seeded. 19. 89—*communis*, (myrtle) flowers solitary. h. w.

AMYGDALUS. Calyx 5-cleft, inferior : petals 5 : drupe with a nut perforated with pores : flowers

sessile. 36. 92—*persica*, (peach) leaves serrate, flowers solitary, sessile. $\frac{1}{2}$. r. e. A variety, *nectarina*, has glabrous fruit.

* *Lythrum*.

FROM ORDER II. DYGINIA, TO ORDER V. PENTAGYNIA.

CRATAEGUS. Calyx superior, 5-cleft: petals 5: styles generally 3 or 5: berry mealy: seeds 2 to 5, bony. 36. 92.—*coccinea*, (thorn bush) leaves heart-ovate, petioles and calyx glandular. $\frac{1}{2}$. w.—*cordata*, leaves heart-ovate, petioles and calyx without glands. $\frac{1}{2}$. w.—*crus-galli*, leaves wedge-obovate, styles 2. $\frac{1}{2}$. w.—*oxyacantha*, (quick-set) leaves obtuse, 3-cleft, styles 3. $\frac{1}{2}$.

SORBUS. Calyx 5-cleft, superior: petals 5: styles 2 to 3: berry pomaceous: seeds 2 or 3 cartilaginous. 36. 92.—*americana*, (mountain ash, or service tree) corymbed, leaves pinnate, leaflets serrate. $\frac{1}{2}$.

ARONIA. Calyx 5-toothed: petals 5: fruit pomaceous: berry 5 or 10-celled; cells 1 or 2-seeded; seeds cartilaginous. 36. 92.—*botryaphium*, (shad-flower) leaves oblong-oval cuspidate, flowers racemed, petals linear. $\frac{1}{2}$. w.—*arbutifolia*, (choak-berry) corymbed; leaves obovate crenate-serrate, midrib glandular above. $\frac{1}{2}$. w.—*ovalis*, leaves round-oval, flowers racemed, petals obovate, ciliate. $\frac{1}{2}$. These species were formerly arranged under the genus *pyrus*.

MESPILUS. Calyx 5-cleft, superior, divisions generally foliaceous: corol 5-petalled: styles 2-5: drupe or berry with from 2 to 5 bony seeds.—36. 92.—*pyracantha*, (medlar, or evergreen thorn) thorny, leaves lance-ovate, crenate, calyx obtuse. $\frac{1}{2}$. —*germanica*, (common medlar) without thorns. $\frac{1}{2}$.

ORDER V. PENTAGYNIA.

PYRUS. Calyx 5-cleft, superior : corol 5-petalled : pome 5-celled, many-seeded. 36. 92—*communis*, (pear) leaves ovate, flowers corymbed. $\frac{1}{2}$. w. e. —*malus*, (apple) leaves ovate, flowers in sessile umbels. $\frac{1}{2}$. r-w. e.—*cydonia*, (quince) leaves entire, flowers solitary. $\frac{1}{2}$. w. e.—*coronaria*, (crab-tree) leaves cordate, angular, flowers corymbed. $\frac{1}{2}$. r-w.

SPIRÆA. Calyx 5-cleft, inferior, spreading : corol 5-petalled : capsule 2-valved within, many-seeded. 36. 92—*alba*, (steeple bush, or hand-hack) leaves wedge-lanceolate, serrate, glabrous, panicled. $\frac{1}{2}$. w.—*tomentosa*, leaves lanceolate, downy, racemes compound. $\frac{1}{2}$. p.—*trifoliata*, (Bowman's root, or Indian physic) leaves ternate, flowers subpanicled. $\frac{1}{4}$. w.

MESEMBRYANTHEMUM. Calyx superior, 5-cleft : petals numerous, linear, cohering at the base : capsule fleshy, many-seeded, turbinate. 13. 87—*cristallinum*, (ice-plant) very branching, leaves ovate with ice-like papillæ. w. e.

ORDER XIII. POLYGYNIA.

ROSA. Calyx urn-form, 5-cleft, fleshy, contracted towards the top : petals 5 : seeds numerous, bristly, fixed to the sides of the calyx within. 35. 92. —*caroliniana*, (swamp-rose) germ globular hispid, peduncles somewhat corymbed and hispid, stem with stipular prickles. $\frac{1}{2}$. r.—*rubiginosa*, (sweet-brier) germs ovate, peduncle and germ hispid, petioles and stems with recurved prickles. $\frac{1}{2}$. r.—*lucida*, (wild rose) germ globular-depressed, somewhat bristly, leaves oblong-oval, glabrous, flowers mostly in pairs, $\frac{1}{2}$. r.—*parviflora*, germ globular-depressed, bristly, prickles on the stipule strait, leaves oval, flowers in pairs. $\frac{1}{2}$. r.

RUBUS. Calyx 5-cleft, corol 5-petalled : pistils

numerous: berry composed of many juices, 1-seeded, acines. 35. 92—*occidentalis*, (black-raspberry) leaflets 3, downy beneath, stem prickly, petioles cylindric. $\frac{1}{2}$. w.—*odoratus*, (flowering raspberry) leaves simple, palmate. $\frac{1}{2}$. r.—*procumbens*, (creeping blackberry) procumbent, peduncles and petioles hook-prickly. $\frac{1}{2}$. w.—*strigosus*, (red-raspberry) without prickles, strongly bristled, leaflets in threes or fives, pinnate, white down beneath. $\frac{1}{2}$. w.—*villosus*, (high blackberry) leaflets 5 or 3, oval-pointed, sharp-serrate, downy both sides, stem and petioles prickly. $\frac{1}{2}$. w.—*saxatilis*, (brier herb) stem herbaceous, creeping, leaflets 3, nearly glabrous. $\frac{1}{4}$. w.—*ideus*, (garden raspberry) leaflets 5 and 3, stem prickly, petioles channelled. $\frac{1}{2}$. w-e.

DALIBARDA. Calyx 5-cleft: corol 5-petalled: styles long, caduceous, 5 to 8; berry composed of dry granulations. 35. 92—*repens*, (dalibard) leaves cordate, stoloniferous. $\frac{1}{4}$. w.—*fragarioides*, leaves ternate, crenate-lobed, ciliate. $\frac{1}{4}$. y.

FRAGARIA. Calyx 10-cleft, 5 alternate divisions smaller: corol 5-petalled: receptacle ovate, berry-like, caduceous. 35. 92—*virginiana*, (American strawberry) calyx spread, down on petioles erect, on peduncles close. $\frac{1}{4}$. w.—*vesca*, (garden strawberry) calyx reflexed, down on petioles much spread. $\frac{1}{4}$. w.

POTENTILLA. Calyx 10-cleft, 5 alternate divisions smaller: corol 5-petalled: seeds awnless, roundish, rugose, fixed to a dry small receptacle. 35. 92—*humila*, (five-finger) nearly stemless, hairy, erect, peduncles 1-flowered shorter than petioles. $\frac{1}{4}$. y.—*reptans*, stem creeping, leaflets obovate serrate, peduncles 1-flowered. $\frac{1}{4}$. y.—*simplex*, stem erect, simple, hairy, leaves oblong-oval, peduncles lateral, 1-flowered, long. $\frac{1}{4}$. y.—*canadensis*, stem ascending, rough-haired. $\frac{1}{4}$. y.—*norwegica*, leaves

ternate, stem forked. 24. y.—*argentea*, (silver cinquefoil) leaflets in 5 wedge-form divisions, silvery whitish, prostrate. 24. y.

GEUM. Calyx 10-cleft, 5 alternate divisions smaller: corol 5-petalled: seeds with a bent awn: receptacle columnar, villous. 35. 92—*rivale*, (avens, or herb bennet) flowers drooping, awns bent in the middle, root-leaves lyrate. 24. p.—*virginianum*, flowers erect, awns twisted near the end, stem-leaves ternate. 24. y-w.

COMARUM. Calyx 10-cleft, 5-alternate divisions smaller: petals 5, smaller than the calyx: receptacle ovate, spongy, permanent, villous. 35. 92—*palustre*, (marsh fivefinger) leaflets in threes, fives, or sevens, serrate. 24. p.

CALYCANTHUS. Calyx 1-leafed, pitcher-shaped, scurfy, with coloured divisions: corol none: styles many, with glandular stigmas: seeds many, tailed, in the succulent calyx. 35. 92—*floridus*, (Carolina allspice) branches spreading, leaves broad-oval. 2. p. e.

CLASS XIII. POLYANDRIA.

ORDER I. MONOGYNIA.

CHELIDONIUM. Calyx 2-leaved: corol 4-petalled: silique-like capsule 1-celled, linear: seeds crested, many. 27. 62—*majus*, (celandine) leaves pinnate-lobed, umbels axillary. 24. y.

ACTAEA. Calyx 4-leaved, caduceous: corol 4-petalled: berry 1-celled: seeds half orbicular: 26. 61—*spicata*, (neclace weed, or bane-berry) racemes terminal. 24. w.

ASCYRUM. Calyx 4-leaved: 2 interior leaflets, cordate, large: corol 4-petalled: filaments disposed in 4 parcels: capsule oblong, 1-celled, 2 valved, included in the calyx leaves. 20. 68—*cruce-andree*, (St. Andrew's cross, or St. Peter's wort)

stem terete, leaves ovate, panicle dichotomous. $\frac{1}{2}$. y.—*stans*, stem ancipital, leaves oblong, flowers vary into the 3d order. y.

CISTUS. Calyx 5-leaved, 2 of them smaller, corol 5-petalled : capsule 3-valved, opening at the top. 20. 80—*canadensis*, (rock-rose) stamens prostrate on the petals, leaves alternate, lanceolate. $\frac{1}{4}$. y. Late in autumn this plant sends off curved ice crystals from near the root, of a very singular structure.

SARRACENIA. Calyx double, 3 and 5-leaved : corol 5-petalled : stigma peltate, covering the stamens : capsule 5-celled. 13. 22—*purpurea*, (side-saddle flower) leaves cup-form with bordered mouths, radical. $\frac{1}{4}$. p. Found in abundance in the lakes on the Catskill mountains near Benton's turn-pike.

CITRUS. Calyx 5-cleft : petals 5, oblong : filaments dilated at the base, and several parcels : berry 9 to 18 celled—Polyadelphous. 18. 70—*aurantium*, (orange) leaves oval with winged petioles. $\frac{1}{2}$. w. e.—*medica*, (lemon) leaves ovate with linear petioles. $\frac{1}{2}$. w. e. A variety *limon* (lemon) has the fruit roundish and small.

PAPAVER. Calyx 2-leaved, caducous : corol 4-petalled : capsule 1-celled, dehiscent by pores under the permanent stigma. 27. 62—*somniferum*, (poppy) leaves clasping. ☺. p. e.—*rheas*, leaves pinnatifid. ☺. r.

TILIA. Calyx 5-parted : corol 5-petalled : capsule 5-celled, globular, coriaceous, dehiscent at the base, one-seeded. 37. 79—*pubescens*, (bass-wood) leaves truncate at the base and oblique, somewhat downy. $\frac{1}{2}$. w.—*americana*, leaves cordate, glabrous. $\frac{1}{2}$. w.

SANGUINARIA. Calyx caducous, 2-leaved : corol about 8-petalled : capsule pod-like, ovate, 1-

celled. 27. 62—*canadensis*, (blood-root) scape 1-flowered, leaves lobed. 2. w.

PODOPHYLLUM. Calyx 3-leaved: corol about 9-petalled: berry 1-celled, crowned with the stigma. 27. 61—*peltatum*, (wild mandrake) leaves peltate, pedate. 2. w.

CAPPARIS. Calyx 4-leaved, coriaceous, caducous: petals 4: stamens long: berry coriaceous, peduncled, 1-celled, globular or pod-like—*spinosa*, (caper-bush) peduncles solitary, 1-flowered, leaves oval, alternate. w-r. e.

NYMPHAEAE. Calyx 4 to 7-leaved, larger than the petals: corol many-petalled: stigma marked with radiated lines: berry many-celled, many-seeded. 13. 22—*odorata*, (pond-lily) leaves round-cordate, leaves of calyx about as long as the petals. 2. w.—*advena*, leaves cordate, petals wedge-form, much shorter than the calyx. 2. y.

ARGEMONE. Calyx 3-leaved: corol 6-petalled: capsule semi-valved. 27. 62—*mexicana*, (horned poppy) leaves cut-pinnatifid, thorny. ☹. y.—variety, *alba*, has white flowers.

FROM ORDER II. DIGYNIA—TO ORDER V. PENTAGYNIA.

FOTHERGILLIA. Calyx truncate, entire: corol 0: filaments very long, clavate: germ bifid: capsule 2-celled or 2-horned: seed bony, solitary. 50. 99—*alnifolia*, (Fothergill's bush) leaves wedge-form, spikes terminal. h.

PAEONIA. Calyx 5-leaved: petals 5: style 0: stigmas 2 or 3: capsules pod-like, many-seeded. 26. 61—*officinalis*, (peony, erroneously called pina) leaves decompound. 2. r. In gardens the stamens usually change to petals.

HYPERICUM. Calyx 5-parted, divisions sub-ovate: corol 5-petalled: filaments often united at the

base in 3 or 5 sets : styles 2 to 5 : capsules roundish with a number of cells equal to the number of styles. 20. 68—*perforatum*, (St. John's wort) stem 2-edged, leaves obtuse having pellucid dots. 24. y.—*parviflorum*, corymbs terminal, forked, leaves sessile. 24. y.—*virginicum*, flowers 9-stamened, terminal, leaves clasping. 24. p.—*canadense*, flowers peduncled axillary solitary, leaves sessile, stem square. y.

DELPHINIUM. Calyx 0 : corol 5-petalled, unequal : nectary 2-cleft, horned behind : capsules 1 or 3, pod-like. 26. 61—*staphisagria*, (larkspur) leaves palmate obtuse-lobed, nectary 4-leaved. b. e.—*azureum*, leaves linear-many-cleft, spiked, spur curved. 24. p. e.

ACONITUM. Calyx 0 : petals 5, upper one vaulted : nectaries 2, hooded, peduncled, recurved : capsules 3 or 5, pod-like. 26. 61—*napellus*, (monk's hood) leaves 5-parted with 3-parted divisions. 24. p. e.

AQUILEGIA. Calyx 0 : petals 5 : nectaries 5 alternating with the petals and ending in horns beneath : capsules 5, distinct. 26. 61—*canadensis*, (columbine) nectary horns nearly strait. 24. r-y.—*vulgaris*, nectary horns incurved. 24. b-p.

CIMICIFUGA. Calyx 4-leaved : petals (or nectaries) 4, pitcher-form, cartilaginous : capsules 4 : seeds scaly. (Petals, pistils and calyx-leaves, variable.) 26. 62—*americana*, (bug-bane) flowers spiked, leaves decom-pound, pistils 5 or 6. 24. w.

NIGELLA. Calyx none : petals 5 : nectaries 5, three-cleft, within the corol : capsules 5, convex, 26. 61—*damascena*, (fennel flower) involucre 5-leaved, longer than the flower. ☺. b.

* Reseda, Ascyrum, Caltha, Helleborus, Anemone, Hepatica.

ORDER XIII. POLYGYNIA.

HYDRASTIS. Calyx 0 : corol 3-petalled : berry composed of 1-seeded acines. 26. 61—*canadensis*, (orange-root) leaves binate, palmate, petioled. 2. w.

CLEMATIS. Calyx 0 : petals, 3, 4, 5, or 6 : seeds compressed : styles permanent, becoming long tails. (Some species are diœcious.) 26. 61—*virginiana*, (virgin's bower) diœcious, climbing, leaves ternate with climbing petioles. 2. w.

THALICTRUM. Calyx 0 : petals 4 or 5 : filaments very long : seeds without tails, striate, terete. (Some species are diœcious.) 26. 61—*dioicum*, (meadow rue) diœcious, leaves heart-roundish with obtuse lobes, peduncles axillary, shorter than leaves. 2. r. w.—*cornuti*, diœcious, leaflets 3-cleft, panicles terminal. 2. w.—*polygamum*, hairy and slender, leaves more than decompound, panicle terminal. 2. w.

HELLEBORUS. Calyx 0 : petals 5 or many : nectaries tubular, 2-lipped : capsules 5 or 6, erectish, compressed, many-seeded. 26. 61—*trifoliatu*s, (gold thread) scape 1-flowered, leaves ternate with roundish crenate leaflets. 2. w. Root creeping and golden yellow.

CALTHA. Calyx 0 : petals 5 to 9 : capsules numerous, many seeded : nectaries 0 : (styles variable in number.) 26. 61—*palustris*, (American cowslip) leaves heart-reniform, crenate. 2. y.

ANEMONE. Calyx 0 : petals 5 to 9 : seeds numerous, naked. 26. 61—*nemorosa*, (wind-flower) stem simple, 1-flowered, 3-leaved with gashed leaflets. 2. r-w.—*thalictroides*, (rue-anemone) stem simple, stem-leaves 6 whorled petioled, root-leaves long-peduncled. 2. w.—*virginiana*, stem forked, many-flowered, petals acute. 2. g-y.

HYDROPELTIS. Calyx 6-leaved somewhat converging : corol 0 : capsules oblong, somewhat fleshy, numerous, 2-celled, 1 or 2-seeded. 26. 61—*purpurea*, (water-shield) leaves oval, peltate, floating. 24. p.

HEPATICIA. Calyx 3-leaved : petals 6 to 9 : seeds naked. 26. 61—*triloba*, (liverleaf) calyx-leaves broad-ovate obtuse, leaves 3-lobed obtuse. 24. w.r. Var.—*acuta*, calyx-leaves acute, leaves 3 to 5-lobed acute. Perhaps this variety ought to constitute a new species. The specimens found by professor Dewey, near Williams' College, are much firmer in their texture than the common kind, and differ materially in their general habit.

ANNONA. Calyx 3-leaved : corol 6-petalled : stigma obtuse : berries 1-celled, many seeded, roundish with a scaly bark. 52. 76—*glabra*, (custard apple) leaves lance-ovate, fruit conic glabrous. e.

LIRIODENDRON. Calyx 3-leaved : corol 6 or 9-petalled, liliaceous : seeds in a samara, imbricate on a strobile-like spike. 52. 75—*tulipifera*, (tulip tree, or white wood) leaves 3-lobed, with the middle lobe abrupt. 2. w.

MAGNOLIA. Calyx 3-leaved : corol 6 to 9-petalled : capsules numerous, imbricate on a strobile-like spike, 2 valved : seeds berried, pendulous. 52. 75—*glauc*, (magnolia, or beaver tree) leaves oval obtuse glaucous beneath, petals obovate. 24. w.

NELUMBium. Calyx 4 or 5-leaved : petals 5 or more : nuts half immersed in a truncate receptacle, and crowned with the permanent style. 26. 61—*luteum*, (nelumba) leaves peltate, peduncles and petioles glabrous. 24. y.

RANUNCULUS. Calyx 5-leaved : petals 5, with claws and a nectariferous pore or scale on the inside of each : seeds numerous. 26. 61—*abortivus*, (crow-foot) radical leaves cordate crenate, stem-leaves

subternate. 24. y.—*acris*, (butter-cup, or crowfoot) lower leaves 3-parted many-cleft, upper ones linear. 24. y.—*sceleratus*, (water crowfoot) lower leaves palmate, upper ones digitate. 24. y.—*pensylvanicus*, calyx reflexed, leaves ternate 3-cleft hairy beneath. ☺. y.—*fluviatilis*, leaves all under water, capillary. y-w.—*fascicularis*, leaves ternate-pinnate, root fascicled. 24. y.—*bulbosus*, calyx reflexed, peduncles grooved, root bulbous. 24. y.—*repens*, scions creeping, leaves linear entire. 24. y.

TROLLIUS. Calyx 0 : petals from 5 to 14 : capsules many, ovate, many-seeded. 26. 61.—*americanus*, (globeflower) petals about 5 obtuse, nectary shorter than the stamens. 24. y.

ATRAGENE. Calyx 2 or 4-leaved, sometimes involucred : petals numerous, outer ones largest : seeds tailed. 26. 61.—*americana*, (atragene) leaves in fours, leaflets cordate. Flowers large. 24. p.

ADONIS. Calyx 4-5-leaved : petals 5 or more, without nectariferous pores : seeds awnless. 26. 61.—*autumnalis*, (pheasant's eye) fruit sub-cylindric, petals 5 to 8. e.

CLASS XIV. DIDYNAMIA.

ORDER I. GYMNOSPERMIA.

A. *Calyxes 5-parted with the divisions or teeth nearly equal.*

TEUCRIUM. Corol deep-cleft on the upper side and without an upper lip ; lower lip 3-cleft, the middle division rounded : stamens and pistils incurved, stamens exsert. 42. 39.—*canadense*, (woodsage, or wild germander) whorls 6-leaved, leaves lance-ovate, serrate, spike crowded. 24. r.—*virginicum*, bracts shorter than peduncle, leaves ovate. 24. r.

ISANTHUS. Calyx bell-form : corol 5-parted,

tube strait, narrow; divisions ovate equal: stamens nearly equal: stigma linear, recurved. 42. 39—*coeruleus*, (blue gentian) viscid-hairy: leaves lance-ovate, tapering to both ends. ☺. b.

VERBENA. Corol funnel-form with a curved tube, border 5-cleft nearly equal: calyx 5-cleft: seeds 2 or 4: sometimes but 2 stamens or 2 barren ones.—*urticifolia*, (vervain) spikes filiform, leaves undivided ovate serrate. 2. w-p.—*hastata*, leaves hastate below and lanceolate above. 2. w-b. *angustifolia*, spikes filiform, leaves narrow lance-linear. Small. 2. r.—*aubletia*, spikes lax, leaves 3-cleft, erect. ☺. r.—*spuria*, stems many, leaves many-cleft jagged. 2. w-r.—*pinnatifida*, leaves pinnatifid.

LAVANDULA. Calyx ovate subdentate, bracts under-studded: corol resupinate: stamens in the tube. 42. 39—*spicata*, (lavander) leaves sessile lance-linear, spike leafy.

LAMIUM. Corol with the upper lip entire, vaulted; under lip 2-lobed; throat with a tooth at each margin. 42. 39—*amplexicaule*, (dead nettle) floral leaves sessile clasping gashed. ☺. p.

BRACHYSTEMUM. Corol with the upper lip sub-emarginate, lower lip obtusely 3-lobed: filaments very short nearly equal: seed oblong-cylindric. 42. 39—*virginicum*, (Virginian thyme) leaves lanceolate, flowers in small heads fastigate, stem square. 2. w.

PYCNANTHEMUM. Involucre bract-like, many-leaved, under small heads of flowers: calyx tubular, striate: corol with the upper lip sub-entire, lower lip 3-cleft: stamens nearly equal. 42. 39—*aristatum*, (wild basil, or mountain mint) bracts linear acuminate, leaves lance-oval with short petioles acuminate, plant downy. 2. w-p.—*incanum*, bracts bristle-form, leaves oval petioled acuminate,

downy. 2/. w-p. Both species have a pleasant pungent taste.

NEPETA. Calyx dry : striated : corol with a longish tube, under lip with the middle division crenate, throat with a reflected margin : stamens approximate. 42. 39—*cataria* (catmint) flowers whorled, leaves cordate tooth-serrate. 2/. w-b.

HYSSOPUS. Corol with the under lip 3-parted, its intermediate division sub-crenate : stamens strait, distant. 42. 39—*officinalis* (hyssop) leaves lanceolate obtuse entire. 2/. b. e.—*nepetoides*, leaves sub-cordate acute-toothed. 2/. y.

MENTHA. Corol nearly equal, 4-cleft : broadest division emarginate : stamens erect, distant. 42. 39—*viridis*, (spear mint) spikes interrupted, leaves sessile, bracts bristle-form. 2/. p.—*piperita*, (peppermint) spikes obtuse, leaves petioled, ovatis. 2/. b.—*borealis*, (Canada mint) leaves petioled projecting. 2/. b-w.

STACHYS. Corol with the upper lip vaulted, the lower lip reflexed at the sides, the middle division largest, emarginate : stamens reflexed towards the sides after discharging the pollen. 42. 39—*aspera* (false horehound) stem erect, with hairs pointing backward, leaves lance-cordate, spike whorled. 2/. r.

SATUREJA. Calyx tubular, striate : corol with divisions nearly equal : stamens distant. 42. 39.—*hortensis*, (summer savory) peduncles axillary 1 or 3-flowered, leaves lance-ovate. ☺. b. e.

LEONURUS. Calyx 5-angled, 5-toothed, corol with the upper lip villose, flat, entire ; lower lip 3-parted, middle division undivided. 42. 39—*cardiaca*, (motherwort) upper leaves 3-lobed, entire. 2/. w.

MARRUBRIUM. Calyx salver-form, rigid, marked with 10 lines : corol with the upper lip 2-cleft,

linear, strait. 42. 39—*vulgare*, (horehound) calyx with 10-hooked teeth, leaves toothed. 4. w.—*su-
phinum*, (nodding horehound) leaves round-cordate,
crenate, rugose-veined, teeth of the calyx 5, strait.
4. b-p.

CUNILA. Calyx cylindric, 5-toothed, throat vil-
lose, corol ringent ; upper lip erect, flat emargi-
nate : 2 of the stamens usually barren. 42. 39.—*pu-
leginoides*, (penny-royal) leaves oblong 2-toothed,
flowers whorled. ☺. b.

GLECHOMA. Calyx 5-cleft : each pair of an-
thers approaching so as to exhibit the form of a
cross. 42. 39—*hederacea*, (ground ivy) leaves kid-
ney-form crenate, stem square procumbent. 4. b.

B. Calyces 2-lipped.

MELISSA. Calyx dry, flattish above, with the
upper lip sub-fastigiate : corol with the upper lip
somewhat vaulted, 2-cleft ; lower lip with the mid-
dle lobe cordate. 42. 39—*officinalis*, (balm) whorls
half-round, bracts pedicelled. 4. w.—*nepeta*, (low
calamint) branching hairy, leaves ovate obtuse. 4.
w-r.

TRICHOSTEMA. Corol with the upper lip fal-
cate : the under lip 3-parted with the middle divi-
sion small, oblong : filaments very long-exsert. 42.
39—*dichotoma*, (blue-curly) stem forked. ☺. b.

DRACOCEPHALUM. Corol with the throat inflat-
ed ; the upper lip concave, the middle division of
the lower lip roundish, notched. 42. 40—*denticula-
tum*, (dragon head) flowers spiked, remote, leaves
lance-obovate. 4. p.—*virginianum*, flowers spiked,
crowded, leaves lance-linear. 4. p.—*variegatum*,
spikes 4-cornered short, leaves oblong. p.

SCUTELLARIA. Calyx with an entire mouth,
which is closed with a lid after the corol falls out :
tube of corol bent. 42. 39—*lateriflora*, (skull-cap)

branching, leaves smooth with a rough keel, racemes lateral and leafy. 24. b. Said to be highly efficacious in the hydrophobia.—*galericulata*, leaves heart-lanceolate, crenate, wrinkled, flowers axillary. 24. b.

ORIGANUM. Calyxes collected into a 4-sided strobile-like cone, with broad intervening bracts: corol with the upper lip erect, flat: under lip 3-parted, divisions nearly equal. 42. 39—*marjorana*, (marjoram) spike ternate, leaves oval obtuse. ☺. p. w. e.—*vulgare*, spikes panicled, bracts longer than calyx. p.

THYMUS. Calyx with the throat closed with hairs: corol with the upper lip flat, emarginate; lower lip longer. 42. 39—*vulgaris*, (thyme) flowers in whorled spikes, leaves ovate revolute. p. e.—*serpyllus*, (mother of thyme) flowers in heads, stem decumbent, leaves flat. p. e.

CLINPOBIUM. Involucre many-bristled, bract-like, under the whorl: perianth 2-lipped: corol with the upper lip flat, obcordate, strait. 42. 39—*vulgare*, (field thyme) stem simple, leaves above hairy remotely toothed. 24. p.

PRUNELLA. Calyx with the upper lip dilated: filaments 2-forked with an anther on one of the points: stigma 2-cleft. 42. 39—*pensylvanica*, (self-heal, or heal-all) leaves lance-ovate toothed, upper lip of calyx 3-awned. 24. p. A variety, *ovata*, has ovate leaves, and *lanceolata*, lanceolate leaves and blue flowers.

PHRYMA. Calyx 5-toothed: seed single. (The under lip of calyx shorter, 2-toothed.) 40. 39—*leptostachya*, (phryma) leaves ovate serrate, spike slender terminal. 24. p.

ORDER II. ANGIOSPERMIA.

A. *Calyxes 2-cleft, or 2-leaved.*

OBOLARIA. Corol 4-cleft, bell-form : capsule 1-celled, 2-valved, many-seeded : stamens from the divisions of the corol. (Persoon says the calyx is 5-cleft—Muhlenberg says it is 2-leaved.) 40. 35—*virginica*, (penny-wort) spikelets terminal, leaves opposite coloured. ☹. r-w.

B. *Calyxes 4-cleft.*

OROBANCHE. Calyx of 2-lobed lateral leaflets : corol ringent : capsule 1-celled, 2-valved, many-seeded : glands under the base of the germ. 40. 35 *uniflora*, (cancer-root, broom-rape) stem 1-flowered. b-w.—*virginiana*, stem branched. p.

BARTSIA. Calyx lobed, emarginate, coloured : corol less than calyx ; upper lip longest : capsule 2-celled : seed angled. 40. 35—*coccinea*, (painted cup) leaves cut-pinnatifid, bract 3-cleft. ☹. r. & y.

RHINANTHUS. Calyx inflated : corol ringent ; the upper lip mostly compressed, the under lip spread 3-parted : capsule 2-celled, obtuse, compressed. 40. 35—*crista-galli*, (yellow-cockscomb) calyx glabrous, upper lip of corol 2-toothed at the apex, stem spotted. ☹. y-p.—*virginicus*, corol with spreading throat, leaves sinuate-toothed. y.

EUPHRASIA. Calyx cylindric : corol 2-lipped ; upper lip 2-cleft, lower lip 3-lobed, with the divisions 2-cleft : lower anthers lobed spinose. 40. 35—*officinalis*, (eye-bright) lower lip emarginate, leaves ovate toothed. ☹.

MELAMPYRUM. Corol with the upper lip compressed, the margin folded back : capsule 2-celled, oblique, dehiscent on one side : seeds 2, gibbous. 40. 35—*lineare*, (cow-wheat) leaves linear-lanceo-

late, the upper ones toothed, bristled at the base, flowers axillary. ☼. y-w.

SCHWALBEA. Calyx tubular-inflated; upper division small, lower division large emarginate: corol ringent: capsule ovate, compressed, 2-celled, 2-valved with a double partition: seeds many, chaffy. 40. 40—*americana*, (chaff-seed) stem square, hairy, leaves lanceolate. 2. p.

C. *Leaves 5-cleft or 5-leaved.*

ZAPANIA. Flowers capitate: calyx 5-toothed: corol 5-cleft: stigma head-peltate, oblique: pericarp bladder-like, vanishing, connecting the two seeds. 40. 40—*lanceolata*, (fog-fruit) leaves lance-linear sharp-serrate, stem creeping.—*nodiflora*, leaves wedge-form toothed, stem creeping.

SCROPHULARIA. Calyx 5-cleft: corol sub-globose resupinate, middle division of lower lip reflexed: capsule 2-celled. 40. 40—*marylandica*, (fig-wort) leaves cordate serrate, stem blunt angled. 2. p.—*glabrata*, leaves doubly-serrate. 2. p.

ERINUS. Calyx 5-leaved: corol with the limb equally 5-cleft, lobes emarginate; upper lip very short, reflexed: capsule 2-celled. 40. 35—*africanus*, (erinus) flowers lateral sessile, leaves lanceolate, slightly toothed. p.

BIGNONIA. Calyx 5-cleft cup-form: corol with the throat bell-form, 5-cleft, ventricose beneath: capsule silique-like, 2-celled: seed membrane-winged. 40. 45—*radicans*, (trumpet-flower) stem rooting, leaves pinnate. h. r.

RUELLIA. Calyx 5-parted, often 2 bracted: corol somewhat bell-form, limb 5-lobed: stamens conjugate: capsule tapering to both ends, toothed, elastically dehiscent: seeds few. 40. 36—*strepens*, (ruel) leaves ovate entire, peduncles 2-flowered short. 2. p.

BUCHNERA. Calyx obsoletely 5-toothed : corol with the limb in 5 equal divisions, the lobes cordate : capsule 2-celled. 40. 34—*americana*, (buchnera) spikes remotely flowered, leaves lanceolate 3-nerved. 2. b.

ANTIRRHINUM. Calyx 5-leaved or deeply 5-parted, the two lower divisions remote : corol ringent, spurred or with a prominent base, the gape closed with a prominent palate : capsule ovate, 2-valved, dehiscent at the apex. 40. 40—*linaria*, (snap-dragon) flowers in terminal spikes, leaves crowded together lance-linear. 2. y.—*canadense*, (toad-flax) flowers racemed, leaves alternate remote. 3. p.

GERARDIA. Calyx 5-cleft : corol 2-lipped ; lower lip 3-parted with emarginate lobes, middle one 2-parted : capsule 3-celled, dehiscent at the base. 40. 40—*flava*, (false foxglove) hairy, leaves lanceolate gash-pinnatifid below, flowers axillary opposite. 2. y.—*quercifolia*, (oak-leaf foxglove) glabrous, stem panicle-like, pinnatifid leaves with lanceolate divisions, upper leaves entire. 2. y.—*purpurea*, (dwarf foxglove) leaves linear, very branching. 3. p.—*pedicularia*, (lousewort foxglove) hairy, leaves pinnatifid doubly-serrate. 2. y.

DIGITALIS. Calyx 5-parted : corol bell-form, ventricose, 5-cleft : capsule ovate, 2-celled. (Flowers racemed.) 40. 40—*purpurea*, (foxglove) corol obtuse with an entire upper lip, leaves hairy. 3. p.

PEDICULARIS. Calyx 5-cleft or obliquely truncate : corol ringent : capsule 2-celled, mucronate, oblique : seeds numerous, coated. (Leaves many-cleft.) 40. 35—*canadensis*, (lousewort) calyx obliquely truncate, spike leafy short, upper lip of corol with 2 bristles. 2. y. & p.—*gladiata*, (high heal-all) spikes leafy rough-haired, flowers alternate. 2. y-p.

MIMULUS. Calyx prismatic, 5-toothed : corol ringent, upper lip folded back upon its sides : stigma thick : capsule 2-celled, many-seeded. 40. 45—*ringens*, (monkey-flower) leaves sessile lanceolate glabrous. 24. b.

CHELONE. Calyx 5-cleft or 5-leaved : corol ringent, inflated ; the upper lip emarginate obtuse, under lip slightly 3-cleft : the rudiment of a smooth filament between the two tallest stamens : capsule 2-celled. 40. 45—*glabra*, (snake-head) leaves lanceolate serrate, upper ones opposite. 24. w.—*obliqua*, leaves all opposite. 24. p.

PENTSTEMON. Calyx 5-cleft or 5-leaved : corol ringent inflated : the rudiment of a bearded filament between the two tallest stamens : capsule 2-celled. (Taken from the last genus.) 40. 35—*pubescens*, (beard-tongue) stem hairy, upper lip short. 24. p.

MARTYNIA. Calyx 5-cleft : corol ringent almost bell-form : capsule woody and barked, with a hooked beak ; 4-celled, 2-valved. 40. 42—*proboscidea*, (unicorn-plant) stem branched, leaves cordate, fruit hook-beaked. 24. w.

CLASS XV. TETRADYNAMIA.

ORDER I. SILICULOSA.

All plants of this class have flowers with 4-leaved calyxes and cruciform corols.

A. Silicle without a notch at the end.

DRABA. Silicle oval-oblong, valves flattish, parallel to the partition : style none. 39. 63—*verna*, (whitlow-grass) leaves lance-oblong acutish subserrate, with short stiff hairs, scape naked, petals 2-cleft. 24. w.—*caroliniana*, leaves ovate hirsute, scape naked simple smooth, silicle linear. 24. w.

BUNIAS. Silicle somewhat 4-sided, not opening

by valves, caducous ; 2 or 4-celled, wrinkled. 39. 63—*edentula*, (sea rocket) leaves obovate sinuate, silicle with 2 smooth one-seeded toothless joints. ☉. Bigelow.

B. *Silicle with a notch at the end.*

ALYSSUM. Filaments of the two shorter stamens marked with a tooth : silicle emarginate, often hairy. 39. 63—*sativum*, (madwort) leaves clasping, flowers corymbed. ☉. y.

COCHLEARIA. Silicle thick, rugose, many-seeded, 2-valved ; the valves gibbous obtuse. 39. 63—*officinalis*, (scurvy grass) root-leaves round-cordate petioled, stem-leaves sessile oblong. ♂. w.—*armoracia*, (horse-radish) root-leaves lanceolate, crenate. ♀. w. e.

LEPIDIUM. Calyx spreading : corol regular : silicle emarginate, cordate, many-seeded : valves carinate, partition contrary. 39. 63—*sativum*, (pepper-grass) leaves oblong, many-cleft, glabrous. ☉. w. e.—*virginicum*, leaves below pinnatifid, above serrate. ♀. w.

THLASPI. Calyx spreading : silicle emarginate, obcordate, many-seeded ; valves resemble two boats with the keels outward. 39. 63—*bursa-pastoris*, (shepherd's-purse) silicle wedge-obcordate, root-leaves pinnatifid. ☉. w.—*campestre*, (mithridate mustard) silicle roundish-cordate, leaves arrow-form. ☉. w.

ORDER II. SILIQUOSA:†

A. *Calyx leaves converging or closed upon the corols, when the flowers are mature.*

ARABIS. Glands 4, one within each leaflet of the calyx, of the size of the reflected scale : silique

† Plants of this order resemble each other so nearly, that long descriptions are necessary.

compressed, torulose, subdivaricate. 39. 63—*thaliana*, (wall-cress) radical leaves oblong petioled, cauline leaves lanceolate sessile, stem erect rough-haired at the base, petals twice as long as the calyx.

☉. w.—*tuberosa*, stem simple, leaves obtuse lanceolate toothed, lower leaves sub-petioled, root tuberous-fibrous. 24. w.—*lyrata*, leaves glabrous, radical leaves lyrate, stem leaves linear-lanceolate sub-falcate. ☼. w.—*hispidula*, radical leaves liontooth-lyrate, stem-leaves lanceolate with forked hairs, stem branchy glabrous. 24. w.—*canadensis*, leaves lanceolate toothed glabrous, or with very soft hairs. w.

TURRITIS. Calyx converging, erect: corol erect: silique very long, angled, striate. 39. 63—*laevigata*, (tower-mustard) leaves glabrous, radical ones obovate serrate, cauline ones lance-linear entire clasping. ♂. w.—*hirsuta*, leaves all hispid, cauline ones clasping, silique 4-angled. 24. w.

DENTARIA. Calyx longitudinally converging; silique bursting elastically with revolute valves: the partition thick and fungus-like: stigma emarginate. (Roots always fleshy with tooth-like processes.)—*diphylla*, (tooth-root) stem with two ternate leaves nearly opposite and unequally gashed. 24. w-y.—*laciniata*, leaves triternate, leaflets 3-parted linear toothed, racemes terminal many-flowered. 24. w-p.

HESPERIS. Calyx closed, shorter than the claws of the petals: petals when bent obliquely, are linear or obovate: silique sub-terete: stigmas forked, with converging apices. 39. 63—*pinnatifida*, (rocket) leaves sharply serrate, upper ones lanceolate, lower one pinnatifid, siliques shortish sub-peduncled, 24. w.—*tristis*, stem branched bristly spreading. y. e.—*matronalis*, (dame's violet) stem simple erect. leaves lance-ovate denticulate. 24. w. e.

ERYSIMUM. Calyx closed; silique columnar,

exactly 4-sided. 39. 63—*officinale*, (hedge-mustard) leaves runcinate, siliques pressed close to the stem. ☼. y.—*barbarea*, (wintercress) lower leaves lyrate, with a roundish terminal lobe, upper leaves obovate toothed. 4. y.

BRASSICA. Calyx erect, converging : partition extending beyond the valves of the silique : seed globose : glands between the short stamens and pistil, and between the long stamens and calyx. 39. 63.—*oleracea*, (cabbage) leaves smooth glaucous repand-lobed. ♂. e.—*napus*, (rape) leaves smooth, upper ones lance-cordate clasping, lower ones lyrate toothed, silique torulose. ♂. e.—*rapa*, (turnip) root orbicular depressed, radical leaves lyrate scabrous, cauline ones entire smooth. ♂. e.

RAPHANUS. Calyx closed, setose : silique torose, somewhat jointed, terete, not opening by valves, 1 or 2-celled : glands between the short stamens and pistil, and between the long stamens and calyx. 39. 63.—*raphanistrum*, (white radish) leaves lyrate, silique 2-celled when immature, and not jointed, in maturity 1-celled and jointed. ☼. w. or y. e.—*sativus*, (garden radish) leaves lyrate, silique terete torose 2-celled. ☼. e. Var. *fusiformis*, root spindle form ; *globosa*, root globose ; *niger*, root blackish and sharp-tasted.

CHEIRANTHUS. Calyx closed, two of the leaflets gibbous at the base : petals dilated : silique when young with a glandular tooth each side : stigma 2-lobed : seed flat. 39. 63—*chiri*, (stock-july-flower) leaves lanceolate acute glabrous. e.

B. *Calyx-leaves spread, not lying closed upon the corol when the flowers are mature.*

CARDAMINE. Calyx leaves spreading but little : stigma entire : a single gland between each of the short stamens and the calyx : silique long bursting

elastically with revolute valves. 39. 63—*pensylvanica*, (American watercress) branching, glabrous, leaves pinnate, leaflets angle toothed roundish-oblong obtuse, siliques narrow erect. w.—*virginica*, leaves pinnate, leaflets lanceolate 1-toothed or eared at the base. (In habit much resembles the shepherd's purse.) 24. w.—*hirsuta*, leaves without stipules, leaflets roundish mostly repand-toothed petioled, flowers tetrandrous. w.

SISYMBRIUM. Calyx and corol spreading : silique bursting, with a short terete beak, valves straitish. 39. 63—*nasturtium*, (English watercress) silique declined, leaves pinnate with sub-cordate leaflets. 24. r. Southern states.—*amphibium* (water-radish) silique declined oblong ovate, leaves pinnatifid serrate, petals longer than calyx. 24. w.

SINAPIS. Calyx spreading : corol with strait claws : glands between the short stamens and pistil, and between the long stamens and calyx : partition extending beyond the valves of the silique, ensiform. 39. 63. *nigra*, (mustard) silique glabrous, leaves linear-lanceolate at top. ☺. y. e.—*alba*, silique hispid, leaves pinnatifid. e.

CLASS XVI. MONADELPHIA.

ORDER III. TRIANDRIA.

SISYRINCHIUM. Spathe 2-leaved : perianth 0 : corol superior, 6-cleft, tubular : style 1 : capsule 3-celled. 6. 18—*anceps*, (blue-eyed grass) culm 2-edged, leaves ensiform, fruit globular glabrous. 24. b.

ORDER V. PENTANDRIA.

PASSIFLORA. Calyx 5-parted, coloured : corol 5-petalled, on the calyx : nectary, a triple filamentous crown within the petals : berry pedicelled. 34. 97—*coerulea*, (passion flower) leaves palmate 5-

lobed. b. South America.—*lutea*, leaves cordate 3-lobed. y. Southern States.

ERODIUM. Calyx 5-leaved: corol 5-petalled: nectariferous scales 5-alternating with the filaments: arils 5, 1-seeded, awned, beaked at the base of the receptacle; awn spiral, bearded within. (Taken from the geranium.) 14. 73.—*cicutarium*, (stork's bill) peduncles many-flowered, leaves pinnate with sessile gash-pinnatifid leaflets, stem prostrate rough-haired. ☹. p.

* *Lysimachia*, *Linum*, *Anagallis*.

ORDER X. DECANDRIA.

GERANIUM. Calyx 5-leaved: corol 5-petalled, regular: nectariferous glands 5, adhering to the base of the long filaments: arils 5, 1-seeded, awned, beaked at the head of the receptacle: awn naked, strait. 14. 73.—*maculatum*, (spotted cranebill, or crowfoot) stem dichotomous erect, leaves gash-5-parted, peduncles 2-flowered. ♀. p.—*robertianum*, (herb-robert) calyx 10-angled pilose, peduncle 2-flowered, leaves in 3 or 5 three-cleft pinnatifid divisions. ☹. p.—*columbinum*, peduncles thrice as long as the 5-parted leaves, capsules glabrous. ☹. b.

MIMOSA: Calyx 5-toothed: corol 5-cleft, 5-petalled, or 0: stamens capillary, very long, 4 to 10 or more, sometimes not united: legume sometimes jointed. 33. 93.—*brachyloba*, (sensitive plant) unarmed, leaves doubly pinnate 8-paired. ♀. r. w. e.—*glandulosa*, unarmed, leaves doubly-pinnate 12-paired. ♀. w. e.—*sensitiva*, prickly. e.

ORDER XIII. POLYANDRIA.

GORDONIA. Calyx simple, 5-leaved or 5-parted: corol 5-petalled adhering at the base: style 5-cornered, stigma 5-cleft: capsule 5-celled: co-

lumella columnar: seeds 2 with leaf-like wings. 37. 74—*lasianthus*, (leaf-seed) leaves leathery glabrous, flowers long-peduncled. $\frac{1}{2}$. w. Southern states.—*franklinia*, flowers sessile. $\frac{1}{2}$. w.

SIDA. Calyx simple, angular, 5-cleft: style many-parted: capsules many, 1 or 3-seeded. (Pedicel articulated under the apex.) 37. 74—*spinosa*, (Indian-mallows) leaves lance ovate, toothed, stipules bristle-form. ☉. y.—*abutilon*, leaves heart-roundish. ☉. y.—*rhombifolia*, leaves lance-wedge-form. $\frac{1}{2}$. y.

HIBISCUS. Calyx double, outer one many-leaved, inner one about 5-cleft: stigmas 5: capsule 5 or 10-celled, many-seeded. 37. 74—*moscheutos*, (hibiscus, or marsh-mallow) leaves ovate acuminate serrate and downy beneath, petiole bearing the flower. $\frac{1}{4}$. w-p.—*palustris*, (marsh hibiscus) leaves ovate sub-trilobed, flowers axillary. $\frac{1}{4}$. p.—*syriacus*, (althaea frutex, or syrian mallows) leaves wedge-ovate 3-lobed toothed. $\frac{1}{2}$. p. Southern states.—*esculentus*, (okra) leaves cordate 5-lobed, outer calyx 10 to 12-parted, caducous. ☉. w.e.

MALVA. Calyx double, outer one 3-leaved, inner one 5-cleft: capsules many, 1-seeded. 37. 74.—*rotundifolia*, (low mallows) stem prostrate, leaves heart-reniform doubly-crenate or 5 to 7 crenate-lobed. $\frac{1}{4}$. b-p.—*caroliniana*, stem prostrate, leaves 5-lobed cut-toothed. ☉.—*sylvestris*, (common mallows) stem erect, leaves with 7 sharpish lobes. $\frac{1}{4}$. b.—*americana*, leaves ovate rough. ☉. y.

ALTHAEA. Calyx double, outer one 6 or 9-cleft: capsules many, 1-seeded. 37. 74.—*officinalis*, (holly-hock or marsh mallows) leaves oblong-ovate, toothed, 3-lobed, downy. $\frac{1}{4}$. p-w. e.—*rosea*, (common holly-hock) leaves cordate crenate 5 to 7 angled rugose. ♂. p. y. w. e.

Gossypium. Calyx double, outer one 3-cleft:

CLASS XVII. ORDER VI to VIII. 73

capsule 4-celled, seeds involved in wool. 37. 74.—
herbaceum, (cotton) leaves 5-lobed mucronate. ☉.
 w. e.

CLASS XVII. DIADELPHIA.

FROM ORDER VI, HEXANDRIA, TO ORDER VIII,
 OCTANDRIA.

FUMARIA. Calyx 2-leaved, caducous : corol irregular, spurred at the base : filaments 2, each with 3 anthers : capsule drupe-like, 1-celled, 1-seeded, not opening by valves ; seed affixed to the side of the cell. 24. 62.—*officinalis*, (fumitory) leaves more than decomposed with leaflets wedge-lanceolate gashed, stem with spreading branches. ☉. r.

CORYDALIS. Calyx 2-leaved : corol ringent 1 or 2-spurred : filaments 2, membranaceous, each with 3 anthers : capsule silique-like, many-seeded. 24. 62.—*cucullaria*, (colic weed) stemless, corol 2-spurred, scape naked, leaves more than decomposed. 24. y-w. Those found near Williams' College are mostly hexandrous—they have also a two-leaved bract, so near the calyx in the immature state, as to give the appearance of a 4-leaved calyx.—*rosea*, 1-spurred, leaves pinnate-pinnatifid, silique one and a half longer than peduncle. 24. r.y.

POLYGALA. Calyx 5-leaved, unequal, 2 of the leaflets wing-like, larger, coloured : corol irregular (or rather, calyx 3-leaved, corol imperfectly papilionaceous) capsule obcordate, 2-celled, 2-valved. Keel of corol sometimes appendaged. 33. 35.—KEEL APPENDAGED.—*paucifolia*, (evergreen snake-root) keel crested, flowers terminal about in threes, leaves ovate near the flowers. 24. r.—*rubella*, (milkwort) keel crested, raceme nearly bractless, wings of corol 3-nerved obtuse longer than keel, stem-leaves linear obtuse, radical ones ovate. 24. r.

—*incarnata*, keel crested, spiked, stem branched erect, leaves alternate subulate. r.—KEEL NOT APPENDAGED.—*sanguinea*, spikes in heads, peduncles scurfy, stem angled, erect, branched. r.—*verticillata*, leaves narrow-linear whorled, flowers with spaces between them. w.r.—*senega*, (seneca snake-root) spike filiform terminal, stem simple, leaves lance-oblong. $\mathcal{U}$. w.

ORDER X. DECANDRIA.

A. Stamens united in one set.

AMORPHA. Calyx bell-form 4 or 5-cleft: banner ovate, concave, wings and keel 0: legume 2-seeded, falcate. 32. 93.—*fruticosa*, (false indigo) somewhat shrubby, leaves glandular petioled, calyx 4-toothed. $\frac{1}{2}$. b.p.

LUPINUS. Corol 2-lipped: anthers, 5 oblong and 5 roundish: legume coriaceous, torulose. 32. 93.—*perennis* (lupine) leaves divided, calyxes not appendaged alternate. $\mathcal{U}$. b.—*villosus*, leaves simple, calyxes appendaged half-whorled. $\mathcal{U}$. w.p.—*filosus*, leaves divided, calyxes appendaged whorled.

CRYPTOLARIA. Corol with the banner cordate, large: keel acuminate: filaments connate, with a dorsal fissure: style curved; legume pedicelled, turgid. 32. 93.—*sagittalis*, (rattle-box) leaves lance-oblong, stipules acuminate decurrent, opposite to the racemes. ☺. y.—*parviflora*, leaves lanceolate, upper stipules decurrent very short opposite to the racemes.

GENISTA. Calyx 2-lipped, 2 upper teeth very short: banner oblong, reflexed back from the pistil and stamens. 32. 93.—*tinctoria*, (dyer's kneed-grass) leaves lanceolate smooth, branches striate. e.

ARACHIS. Calyx 2-lipped: corol upside down: legume gibbous, torulose, veiny, coriaceous. 32. 93

hypogaea, (pea-nut) stem procumbent, leaves pinnate abrupt. ☹. y.

B. *Stamens in 2 sets ; generally 9 in one set, and 1 alone in the other.*

1. *Legume many-seeded, stigma pubescent.*

PISUM. Calyx with the divisions leaf-like, about equal : banner protruding 2 folds : style compressed, carinate, villose above : legume without down at the suture. 32. 93—*sativum*, (pea) petioles cylindric, stipules rounded at the base and notched. ☹. w. e. Var. *umbellatum*, bouquet pea, peduncles many-flowered terminal : *quadratum*, garden pea, fruit cinereous : *humile*, dwarf pea, leaflets bijugous.—*maritimum*, (sea pea) petioles flattish above, stem angular, stipules somewhat arrow-form. 24. w.

LATHYRUS. Calyx with the two upper divisions shorter : style flat, villose above, broader towards the top. (Stem mostly winged, leaflets 2 or more terminated by a divided tendril.) 32. 93—*odoratus*, (sweet pea) peduncles 2-flowered, leaflets ovate-oblong. ☹. p. e.—*venosus*, stem not winged. ☹.

VICIA. Calyx emarginate above, 2-toothed ; 3 strait long teeth below : banner emarginate : stigma bearded transversely on the lower side. 32. 93.—*americana*, (wild vetch) peduncles many-flowered shorter than the leaves, stipules half-arrow-form. 24. p.—*pusilla*, peduncles axillary 1-flowered, leaves about in sixes, stipules half-arrow-form. y. w.—*mitchilla*, peduncles many-flowered, leaflets about 7-paired retuse-mucronate, legume 2-seeded. w. p. This species was found last summer by professor Mitchill of New-York, and sent to the Italian naturalist, C. S. Rafinesque ; who, discovering it to be a new species, gave it this specific name.—*sativa*, (tare) legumes sessile axillary mostly in pairs, stipules toothed. b-w.—*faba*, (gar-

den bean) legumes nearly sessile axillary 3 together swelling at the seeds, stipules sagittate. ☉. e.

PHASEOLUS. Keel, stamens and style spirally twisted together. 32. 93—STEMS TWINING.—*vulgaris*, (common poled-bean) racemes solitary shorter than the leaves, peduncles in pairs. ☉. p. w. e. *helvolus*, (wild bean) flowers in heads, leaflets 3-cornered oblong. ☉. p.—STEM ERECT.—*nanus*, (bush-bean) bracts larger than calyx, stem smooth. ☉. w. p. e. All of this genus are usually called kidney-beans.

DOLICHOS. Banner with two oblong parallel processes at the base, compressing the wings beneath them. 32. 93—*purpureus*, (cowhage) stem twining glabrous, petioles hairy. ☉. p.—*phaseolus*, stem erect, seeds globular, with coloured hilums. w.

ROBINIA. Calyx 4-cleft, upper division 2-parted: banner large, reflexed, roundish: legume gibbous, elongated. 32. 93—*viscosa*, (locust tree) racemes erect, branches and legumes glandular-viscid. h. r.—*hispida*, stem bristly without thorns. h. p.—*pseudo-acacia*, (false-acacia) racemes pendant, legumes smooth, stipules spinous. h. w.

INDIGOFERA. Calyx spreading: keel with a subulate spur both sides: legume linear, small, terete or quadrangular. 32. 93—*tinctoria*, (indigo) leaves pinnate, racemes shorter than the leaves, stem somewhat woody. e.

2. *Legume many-seeded, stigma without pubescence.*

VEXILLARIA.* Banner very large, spreading, overshadowing the wings: calyx bell-form or tu-

* This name is given as a substitute for that of the 1712th genus of Persoon, which is so severely censured by Doctor Smith in Rees' Cyclopædia.

bular : legume linear, very long, acuminate. 32. 93.—*virginiana*, (butterfly-weed) leaves ternate oblong pubescent, calyxes twinned. b.—*mariana*, leaves ternate, calyx cylindric, bracts lance-linear. w.p.

GALACTIA. Calyx 4-toothed, 2-bracted : petals all oblong, banner broader incumbent : stigma obtuse : legume terete : seed roundish. 32. 93.—*glabella* (milk-way plant) glabrous, leaves oblong-ovate somewhat emarginate. 2. p.

GLYCINE. Calyx 2-lipped, the tooth of the lower lip longest : the end of the keel curling upwards, and, in appearance, pushing back the banner : style incurved with the keel : legume oblong compressed. 32. 93.—*angulata*, (wild bush-bean) leaves ternate, side ones 2-lobed, end one ovate. w.p.—*monica* (pea-vine or wild liquorice) stem twining, hairy, leaves ternate ovate. 3. b-w.—*aphos* (ground-nut) pinnatifid leaves with 7 lance-ovate leaflets, stem twining, root tuberous. 2. p.

GALEGA. Calyx with subulate teeth nearly equal : legume torulose, teretish. (Very glabrous pinnate leaves.) 32. 93.—*virginica* (goat's rue) calyx woolly, leaflets oval-oblong. 2. p.

3. Legumes few-seeded.

MEDICAGO. The keel deflected from the direction of the banner : legume compressed, cochleate. 32. 93.—*sativa* (lucerne clover) leaflets oblong toothed, peduncles racemed. 2. b. c.—*lupulina*, procumbent, leaflets obovate, legume reniform 1-seeded. 8. y.—*maculata*, leaflets obcordate toothed, stipules toothed. 3. y.

ASTRAGALUS. Calyx 5-toothed : keel obtuse : legume somewhat 2-celled, incurved at the suture below. 32. 93.—*canadensis* (milk vetch) spreading, leaflets (about 21) glabrous, legume sub-cylindric.

2. y.—*carolinianus*, erect, leaflets (about 41) hairy beneath, legumes swelled. 2. y.—*secundus*, procumbent, legumes pointing one-way. 2. p.

4. *Legumes about 1-seeded.*

TRIFOLIUM. Flowers sub-capitate : legume included in the calyx, not opening by valves, 2 to 4-seeded. (Leaves always ternate.) 32. 93—*pratense* (red clover) heads dense-ovate, 4 of the calyx-teeth equal, stipules awned. 2. r.—*rapens* (white clover) creeping, heads umbelled, leaflets emarginate serrulate. 2. w.—*arvense* (field clover, or rabbit-foot) heads cylindric, calyx-teeth bristle-form longer than corol, leaflets narrow-obovate. ☺. r-w.

MELILOTUS. Flowers racemed : calyx tubular, 5-toothed : keel simple, shorter than the wings and banner : legume rugose, longer than the calyx. (Taken from the trifolium.) 32. 93—*officinalis* (melilot clover) stem erect, stipules lance-subulate. w.

LESPEDEZA. Calyx 5-parted, divisions nearly equal : keel of the corol transversely obtuse : legume lens-form, unarmed, 1-seeded. (Leaves always ternate. Taken from the hedysarum.) 32. 93—*capitata* (bush-clover) erect, leaves sessile with oblong leaflets, little heads in terminal heaps, legume much smaller than the calyx. p. A variety, *angustifolia*, leaves lance-linear, peduncles long. —*polystachia*, erect and very downy, leaflets round ovate, legume and calyx equal. w.—*procumbens*, procumbent, hairy, leaflets ovate. 2. p.

5. *Legumes jointed, or in lomentis.*

HEDYSARUM. Calyx 5-cleft : keel of corol transversely obtuse : loment many-jointed, joints 1-seeded, compressed, generally hispid. (Most, or all, the species in the Northern States have ternate leaves.) 32. 93—*canadense* (bush-trefoil) leaves

lance-oblong, stipules filiform, flowers racemed. 2l. p.—*violaceum*, leaves oval obtuse, racemes umbelled, flowers in pairs. 2l. p.—*divergens*, leaves oblong obtuse, racemes longer than petioles, flowers in pairs. 4l. p.—*nudi-florum*, leaves roundish-ovate pointed, scape paniced glabrous. 4l. p.—*rotundifolium*, stem prostrate hairy, leaves orbicular. 4l. p.—*canescens*, leaves roundish, stem angular ciliate bristly. 2l. p.

STYLOSANTHES. Calyx tubular, very long, bearing the corol which originates higher than the top of the germ : loment two-jointed, hooked. (Sometimes the pod is in a single joint.) 32. 93—*elator* (pencil-flower) leafets lanceolate, bracts ciliate, flowers spiked. y.

AESCHYNOMENE. Calyx 2-lipped : loment compressed, one suture strait, another lobed ; joints truncate, 1-seeded. 32. 93—*hispida* (false sensitive plant) petioles with bristly tubercles, leafets many-paired linear obtuse. 32. y-r.

POLYADELPHOUS PLANTS.

The genera *Ascyrum* and *Hypericum* were placed in the class *polyadelphia* by Linneus, and are still retained in that class by many authors. We, following Persoon's method, have removed them to the class *polyandria*, and left the class *polyadelphia* out of the system.

CLASS XVIII. SYNGENESIA.

ORDER I. POLYGAMIA ÆQUALIS.

A. Florets ligulate.

TRAGOPOGON. Calyx simple, many-leaved : receptacle naked : egret plumose and stiped. † 45. 53

† Pull off the corol, stamens and styles ; whatever is left on the germ is the egret. In some flowers the stipe to sti-

—*dandelion* (goat's beard) stemless, leaves erisiform, flower with a scape. $\mathcal{U}$. y.—*horrifolium*, having a stem. δ . p.

APARGIA. Calyx imbricate: receptacle naked: egret plumose, sessile. (Taken from the leontodon.) 49. 53—*autumnalis* (false hawkweed) leaves lanceolate smoothish tooth-pinnatifid, scape branching. y. Dr. Bigelow supposes it came to Boston from Europe.

LEONTODON. Calyx double: receptacle naked: egret plumose, stiped. 49. 53—*taraxacum*, (dandelion) leaves radical runcinate, outer calyx-leaves reflexed. $\mathcal{U}$. y.

PRENANTHES. Florets in a simple series (or in one circular row:) calyx calyced: receptacle naked: egret simple, sub-sessile. 49. 53—*alba* (white lettuce) florets numerous, leaves angular and halbert-form toothed, flowers nodding. $\mathcal{U}$. w.—*altissima*, florets about 5, leaves 3-lobed. $\mathcal{U}$. y-r.—*cordata*, leaves cordate toothed ciliate. $\mathcal{U}$. y.

LACTUCA. Calyx imbricate, cylindric, with the margin membranaceous: receptacle naked: egret simple, stiped: seed smooth. 49. 63—*sativa* (garden lettuce) leaves rounded, those of the stem cordate, corymbd. y.—*elongata* (tall lettuce) leaves smooth beneath, lower ones runcinate clasping, upper ones lanceolate. $\mathcal{U}$. w. Dr. Bigelow calls this the fire-weed; but the *fire-weed* is a species of *senecio*.

HIERACIUM. Calyx imbricate, ovate; egret simple, sessile: receptacle naked or sub-pilose.—(From white becoming yellowish.) 49. 53—*venosum*

ped egret will not appear before full maturity. Pull off all the germs; if nothing is left, the receptacle is naked. But whatever is left belongs to the receptacle, and gives it the character of chaffy, hairy or bristly.

(veiny hawkweed) scape naked branched, leaves radical prostrate obovate ciliate entire with coloured veins. $\mathcal{U}$. y.—*kalmii*, stem many-flowered, leaves small lanceolate toothed. $\mathcal{U}$. y.—*scabrum*, panicle glandular hairy. $\mathcal{U}$. y.

SONCHUS. Calyx imbricate inflated : egret pilose, sessile : receptacle naked. 49. 53—*oleraceus* (sow thistle) peduncles woolly umbelled, calyx glabrous, leaves runcinate denticulate. ☺. y.—*pal- lidus*, raceme terminal compound, leaves lance-en- siform clasping toothed. y.—*palustris*, calyx and peduncles bristly, somewhat umbelled, leaves run- cinate with sagittate base. $\mathcal{U}$.

CYNARA. Receptacle bristly : calyx dilated, im- bricate ; scales with fleshy base, emarginate, point- ed : egret plumose, sessile. 49. 54—*scolymus*, (garden artichoke) leaves prickly or unarmed pin- nate and undivided, calyx-scales ovate. b. e.

HYOSERIS. Calyx sub-globular, calyced, the ex- terior very small : receptacle naked : egret unequal, outer simple, pilose, inner membranaceous : seed near the margin often involved in the scales of the calyx. 49. 53—*prenanthoides*, (swine lettuce) stem- leaves clasping, radical ones sub-lyrate. y.

KRIGIA. Calyx simple, many-leaved : egret 5 membranous leaves with 5 alternating bristles : re- ceptacle naked. 49. 53—*virginica*, (dwarf-dandelion) scape 1-flowered, leaves lance-lyrate, glabrous. ☺. y.

CICHORIUM. Calyx calyced : egret many chaffy leaves : receptacle somewhat chaffy. 49. 53 —*intibus*, (succory or endive) flowers sessile in pairs, leaves runcinate. $\mathcal{U}$. b.

B. *Florets tubulous ; flowers capitate.*

LIATRIS. Calyx imbricate, oblong : egret plu- mose, coloured : receptacle naked. (Flowers pur-

ple.) 49. 54—*spicata* (gay feather) leaves linear entire glabrous ciliate at base dotted, flowers spiked, calyx-scales linear. 2. p.—*scariosa*, raceme terminal, calyx-scales obovate. 2. p.—*squarrosa*, peduncles 1-flowered. 2. p.

VERNONIA. Calyx imbricate, ovate; egret double, exterior chaffy and short, interior capillary: receptacle naked: stigma 2-cleft, shortish. 49. 55—*noveboracensis* (flat-top) corymb fastigiate, stem glabrous, leaves lanceolate. 2. p.—*fracata*, stem pubescent. 2. r.

CNICUS. Calyx imbricate, with prickly scales: receptacle villose: egret plumose. (Taken from the carduus.) 49. 54—*lanceolatus* (thistle) leaves decurrent hispid pinnatifid with 2-lobed spreading divisions, stem hairy, calyx with lance-thorny scales. ♂. p.—*arvensis* (Canada thistle) leaves sessile glabrous tooth-pinnatifid edged with spines, panicked, scales of calyx minute lanceolate with short soft bristly spines. ♂. p.—*altissimus*, radical leaves pinnatifid, stem leaves lance-oblong toothed ciliate. 2. p.

CARTHAMUS. Calyx ovate, imbricate with scales, ovatish-leafy at apex: egret chaff-hairy or none: receptacle chaff-bristly. 49. 54—*coeruleus* (false-saffron) egret hairy, leaves thorny-toothed. 2. b. e. *tinctorius*, egret none, leaves serrate prickly. ☹. y. e.

OXOPORDON. Calyx imbricate with sharp-mucronate scales: egret pilose, caducous: receptacle alveolate: seed transversely sulcate. 49. 54—*acanthium* (cotton thistle) leaves sinuate downy thorny oblong, decurrent.

CARDUUS. Calyx ovate, imbricate with prickly scales: receptacle villose: egret pilose. 49. 54—*pectinatus* (comb-tooth thistle) leaves decurrent lanceolate pectinate. ♂. p.—*marianus*, leaves clasping, spines channelled doubly-thorned. ☹.

ARCTIUM. Calyx globose, with scales hooked at apex: egret chaff-bristly: receptacle chaffy.

49. 54—*lappa* (burdock) stem-leaves cordate. ♂. p.

SPARGANOPHORUS. Calyx sub-globose, imbricate with unequal scales recurve-spreading at the lips: receptacle naked: seed with a cup-like crown, sub-cartilagenous. 49. 55—*verticillatus* (crown-cup) leaves linear-setaceous whorled, about 1-flowered.

C. Florets tubulous; flowers discoid.

BIDENS. Calyx calyced, nearly equal; sometimes the flower is furnished with one or two radiate florets: receptacle chaffy, flat: egret 2, 3 or 4 awns with reflexed and erect lateral prickles: seed 4-cornered. 49. 55—WITH 1 OR 2 RADIATE FLORETS.—*bipinnata*, (burr-marigold or cuckold) leaves doubly-pinnate. ☺.—*chrysanthemoides*, leaves oblong tapering to both ends, calyx shorter than ray. ☺. y.—*cernua*, leaves lanceolate, outer calyx longer than the florets. ☺. y.—WITHOUT RADIATE FLORETS.—*frondosa*, outer calyx 6 times longer than the florets, lower leaves pinnate, upper ones serrate. ☺. y.—*connata*, stem-leaves in threes, floral ones lance-oblong. ☺. y.

KUHNTIA. Calyx imbricate, cylindrical: egret plumose, sessile: receptacle naked. 49. 55—*eupatoroides*, (false boneset) leaves serrate, corymb compact. ♀. w.—*critonia*, leaves entire, corymb spreading. ♀. w.

EUPATORIUM. Calyx imbricated (rarely simple) oblong: style long, cloven half way down: egret pilose or rough papillose: receptacle naked. 49. 55—FLORETS 6 OR MORE.—*perfoliatum*, (boneset, thoroughwort) leaves connate-perfoliate downy. ♀. w.—*purpureum*, leaves petioled 4 or 5 in a whorl lance-ovate, stem hollow. ♀. p.—*verticillatum*, leaves 3 or 4 in a whorl with wedge-form base

stem solid glabrous. 2l. p.—FLORETS 3 TO 5.—*scs-silifolium*, leaves clasping dotted beneath. 2l. w.—*verbenifolium*, leaves sessile, florets 5, calyx hairy. 2l. w.

MIKANIA. Calyx 4 or 6-leaved, equal; 4 or 6-flowered; receptacle naked: egret pilose. 49. 55—*scandens* (climbing boneset) stem glabrous, leaves cordate spread-toothed. w.

CACALIA. Calyx cylindric, oblong; somewhat calyced at the base: receptacle naked: egret pilose. (Leaves mostly succulent.) 49. 55—*suaveolens* (wild caraway) leaves hastate-sagittate. 2l. w.—*atriplicifolia*, radical leaves cordate, stem-leaves deltoid. 2l. w.—*reniformis*, radical leaves repand-toothed. 2l. w.

ORDER II. POLYGAMIA SUPERFLUA.

A. Flowers discoid.

CONYZA. Calyx imbricate with scales sub-linear ovate; or hemispheric and sub-scarious: egret simple, capillary: receptacle naked. Florets of the ray with a 3-cleft border, not composing a ray in appearance. 49. 55—*camphorata*, (plowman's wort) leaves lance-ovate sessile, corymb crowded. ☹. p.—*bifrons*, leaves spatulate clasping. 2l.

GNAPHALIUM. Calyx imbricate, with the marginal scales rounded, scarious, shortish, glossy, coloured: receptacle naked: egret pilose or plumose. (Florets often all perfect.) 49. 55—*plantagineum*, (mouse-ear, life everlasting) small, corymb compact, root-leaves spatulate, shoots procumbent, dioecious. 2l. w.—*margaritaceum*, (common life everlasting) leaves lance-linear acuminate, corymb fastigiate, odour pleasant. 2l. w.—*uliginosum*, (cudweed) stem much-branched, leaves lance-linear tapering to both ends, racemes terminal crowded. ☹. w.

ARTEMISIA. Calyx imbricate, with scales rounded, converging: egret 0: receptacle somewhat villose or nakedish. (Flowers mostly rounded.) 49. 55—**LEAVES PINNATIFID**—*absinthium* (wormwood) divisions of radical leaves obtuse, of stem-leaves acutish. $\mathcal{U}$. e.—*vulgaris*, divisions of leaves all acute and toothed. $\mathcal{U}$.—**LEAVES PINNATE**—*abrotanum* (southern wood) lower leaves doubly-pinnate, upper ones pinnate filiform. $\mathcal{h}$. e.—*pontica*, stem-leaves doubly-pinnate with linear leaflets, flowers nodding. $\mathcal{U}$.

TANACETUM. Calyx imbricate, hemispheric: scales acuminate: rays obsolete, 3-cleft: egret somewhat marginal: receptacle naked. (Flowers corymbed.) 49. 55—*vulgare*, (tansy) leaves doubly-pinnate. $\mathcal{U}$. y. e.

B. Flowers radiate.

CHRYSANTHEMUM. Calyx hemispherical, imbricate, with the scales membranous at the margin: receptacle naked: egret none, or a narrow margin. 49. 55—*leucanthemum*, (ox-eyed daisy) leaves clasping obtuse cut-pinnatifid, radical ones obovate. $\mathcal{U}$. w.—*parthenium*, (feverfew) corymbed, leaves compound, leaflets ovate. $\mathcal{U}$. e.

TAGETES. Calyx simple, 1-leafed, 5-toothed, tubular: florets of the ray 5, permanent: egret 5 erect awns: receptacle naked. 49. 55—*erecta*, (African marigold) stem erect, calyx angular, leaves pinnate. $\mathcal{U}$. y. e.—*patula*, (French marigold) stem spreading, calyx smooth. $\mathcal{U}$. y. e.

BELLIS. Calyx hemispherical, scales equal: egret 0: receptacle naked conical: seed obovate. 49. 55—*perennis*, (garden daisy) scape 1-flowered, leaves obovate. $\mathcal{U}$. b-w. e.

PYRETHRUM. Calyx hemispherical, imbricate with scales acutish and scarious margined: egret

a marginal ring : receptacle naked. (Taken from *Chrysanthemum*.) 49. 55—*serotinum*, (wild feverfew) leaves lanceolate, branches corymbed. 2.

ARNICA. Calyx with leaflets equal : egret simple : receptacle naked. The florets of the ray usually have 5 filaments without anthers. 49. 55—*montana*, (arnic) leaves ovate entire having 2 opposite cauline ones. 2. y. e.

DORONICUM. Calyx-scales equal, in two rows, longer than the disk : egret simple : receptacle naked : seeds of the ray naked and destitute of egret. 49. 55—*nudicaule*, (leopard's bane) stem almost leafless. 2. y.

INULA. Calyx imbricate or squarrose : egret simple : anthers ending in 2 bristles at the base : receptacle naked : ray florets numerous. 49. 55—*helenium*, (elecampane) leaves clasping ovate downy beneath, calyx-leaves ovate. 2. y.—*mariana*, leaves sessile lance-oblong glandular-toothed tapering base. 2. y.

ERIGERON. Calyx imbricate : egret pilose : receptacle naked : florets of the ray linear, very narrow, numerous. 49. 55—*bellidifolium*, (early flea-bane) root-leaves obovate serrate, stem-leaves lanceolate entire. 2. p. w.—*philadelphicum*, (blue flea-bane) stem-leaves half-clasping lanceolate subserrate, ray-florets as long as those of the disk, stem many-flowered. 2. p. b.—*canadense*, (Canada flea-bane) leaves lanceolate ciliate, lower ones tooth-serrate, paniced, stem and flowers hairy, flowers small numerous. 2. w.

SOLIDAGO. Calyx-scales imbricate, closed : egret simple : receptacle naked, furrowed with dots or punctures : ray-florets about 5. (Yellow.) 49. 55—RACEMES POINTING ONE WAY.—*altissima*, (golden rod) stem erect hairy tall, leaves lanceolate rough wrinkled, lower ones deep-serrate, raceme

panicled. 2. y.—*rugosa*, very rough, lower leaves with close serratures, racemes spread-panicled. y.—*canadensis*, stem downy, leaves rough serrate, racemes panicled recurved, ligulate, florets abbreviated. 2. y.—RACEMES ERECT.—*bicolor*, leaves oval, lower ones serrate, stem and leaves hairy, calyx-leaves obtuse. 2. w-y.—*lanceolata*, stem and leaves glabrous, branching, leaves lance-linear entire, corymbs terminal. 2. y.—*laevigata*, stem and leaves smooth, leaves fleshy, peduncles scaly downy. 2. y.—*caesia*, (a variety of *flexicaulis*) glabrous, leaves acuminate, racemes axillary. y.

SENECIO. Calyx cylindric; leaflets with withering, blackish tips, and a few small calycle leaflets at the base: egret simple: receptacle naked. 49. 55 —*aureus*, (rag-wort) root-leaves heart-ovate serrate petioled, stem-leaves pinnatifid-toothed with lanceolate terminal divisions. 2. y.—*hieracifolius*, ray obscure, leaves clasping oblong unequally toothed. ☼. y.—*vulgaris*, ray obscure, flowers scattered, leaves sinuate-pinnatifid clasping toothed. ☼. y.—*elongatus*, glabrous, root-leaves spatulate, stem-leaves pinnatifid. 2.

TUSSILAGO. Calyx simple, scales equal, and equalling the disk, sub-membranous: receptacle naked: pistillate florets ligulate or without teeth: egret simple, sessile. (Sometimes polygamous.) 49. 55—*farfara*, (colt's foot) scape 1-flowered scaly, at length come out radical heart-angular leaves. 2. y.

ASTER. Calyx imbricate, the inferior scales spreading: egret simple: receptacle naked, scrobiculate. (Florets of the ray more than 10, except in *solidaginoides*, and a few other species.) 49. 55. LEAVES LANCE-LINEAR ENTIRE.—*solidaginoides*, (star-flower) leaves obtuse with scabrous margins, branches fastigiate-corymbed, flowers sessile with

5-flowered rays, calyx-scales whitish green-tipped. $\mathcal{U}$. w.—*linarifolius*, leaves keeled dotted rough cuspidate, fastigiate, stem sub-decumbent. p.—*subulatus*, glabrous, leaves subulate, stem panicled, flowers small many. w.b.—*salicifolius*, glabrous, stem panicled at top, calyx-scales acute with spreading tips. b.—*novae-angliae*, leaves clasping eared at the base hairy, calyx-scales lax coloured lanceolate. p.—*cyaneus*, leaves clasping smooth, stem panicled glabrous, branches racemed, inner calyx-scales with coloured tips. b.—LEAVES OVATISH ENTIRE—*cornifolius*, glabrous, leaves acuminate short-petioled with rough margin. w.—*amygdalinus*, leaves tapering to the base, margin rough, fastigiate. w. LEAVES SERRATE CORDATE—*undulatus*, leaves clasping, lower ones with winged petioles. b.—*cordifolius*, leaves all with winged petioles. p.w. LEAVES SERRATE OR TOOTHED OVATE.—*corymbosus*, fastigiate. w.—*chinensis*, (china aster) calyx leafy, branches 1-flowered. e. LEAVES LANCEOLATE, LOWER ONES SERRATE—*funiceus*, leaves clasping, panicled—*diffusus*, leaves glabrous, stem hairy, much-branched. w.

HELENIUM. Calyx 1-leafed, many parted : egret s chaffy leaves : receptacle naked in the disk, chaffy in the ray : florets of the ray half-3-cleft : seed villose. (Leaves decurrent.) 49. 55—*autumnale*, (false-sunflower) leaves serrate glabrous. $\mathcal{U}$. y.

BOLTONIA. Calyx imbricate : egret tooth-awned, somewhat 2-horned : receptacle hemispherical, alveolate : florets of the ray numerous : seed flat-compressed, margined. 49. 55—*asteroides*, (false-chamomile) leaves entire, seeds oval glabrous. $\mathcal{U}$. r-y.—*glastifolia*, lower leaves serrate, seeds obcordate. $\mathcal{U}$. r-y.

MATRICARIA. Calyx flat, imbricate, scales scarious at the margin : receptacle naked, cone-cylin-

dric : egret none. 49. 55—*chamomilla*, (wild chamomile) leaves pinnate and doubly-pinnate.

ANTHEMIS. Calyx hemispherical, nearly equal : egret 0, or a membranous margin : florets of the ray more than 5 : receptacle chaffy, the chaffs flat, with a rigid acuminate apex. 49. 55—*cotula*, (mayweed) receptacle bristly, leaves doubly-pinnate, leaflets 3-parted. ☉. w.—*arvensis*, divisions of leaves lance-linear. ☉. w.—*nobilis*, (chamomile) receptacle chaffy, leaflets 3-parted linear-subulate. 24. e.

ACHILLEA. Calyx imbricate, ovate : egret 0 : receptacle chaffy : florets of the ray 4 to 10, dilated. (Flowers corymbed.) 49. 55—*millefolia*, (yarrow) leaves doubly-pinnatifid, stem grooved. 24. w.

VERBESINA. Calyx in double order : receptacle chaffy : florets of the ray about 5 : egret awned. 49. 55—*sigesbeckia*, (crown-beard) leaves decurrent opposite lance-ovate serrate. 24. y.

ORDER III. POLYGAMIA FRUSTRANEA.

RUDBECKIA. Calyx with a double order of scales : receptacle chaffy, conic : egret a 4-toothed margin or 0. 49. 55—*laciniata*, (cone flower) leaves pinnate, stem-leaflets oblong, with the egret. 24. y.—*purpurea*, leaves lance-ovate alternate undivided, ray-petals 2-cleft. 24. p.—*triloba*, leaves spatulate, lower ones 3-lobed, upper ones undivided. 8. y.

HELIANTHUS. Calyx imbricate, sub-squarrose, leafy : receptacle flat, chaffy : egret 2-leaved, caducous. 49. 55—*annuus*, (sunflower) leaves all cordate 3-nerved, flowers drooping. ☉. y.—*decapetalus*, leaves ovate, stem smooth below, peduncles scabrous, ray about 10-petalled. 24. y.—*divaricatus*, leaves opposite sessile ovate-oblong, panicle forked. 24. y.—*altissimus*, leaves alternate lanceolate, petioles ciliate. 24. y.—*tuberosus*, (Jerusalem arti-

choke) lower leaves heart-ovate, root tuberous. 24. y.

COREOPSIS. Calyx double, also many-leaved : seeds compressed, emarginate : receptacle chaffy : egret 2-horned. 49. 55.—*verticillata*, (tickseed sunflower) leaves pinnate three or five in a whorl. 24. w.—*trichosperma*, pinnate leaves with 5 or 7 leaflets, seed wedge-form. y.—*auriculata*, leaves ovate entire, lower ones ternate. 24. y.

CENTAUREA. Calyx various, mostly imbricate, roundish : egret simple, various : receptacle bristly : corols of the ray funnel-shaped, longer, irregular. 49. 54.—*cyanus*, (blue-bottle) leaves linear entire lower ones toothed. ☉. b. e.—*jacea*, leaves lanceolate entire, radical ones a little toothed. 24. b.—*benedicta*, (blessed thistle) leaves sub-decurrent, calyx with branchy thorns.—*centaureum*, (tall blue-bottle) leaves pinnate, leaflets doubly-serrate. e.

ORDER IV. POLYGAMIA NECESSARIA.

SILPHIUM. Calyx squarrose, scales leafy, broad : egret 2-horned-margin : receptacle chaffy : seeds compressed, obcordate, margined. 49. 55.—*perfoliatum*, (ragged cup) leaves opposite connate, stem 3-sided. 24. y.—*ternatum*, leaves in threes near the middle of the stem, paniced. 24. y.

POLYMNIA. Calyx double, exterior 4-5-leaved, interior 10-leaved, leaflets concave : egret 0 : receptacle chaffy. 49. 55.—*canadensis*, (leaf-cup) leaves denticulate, lower ones pinnatifid. 24. w.—*vedalia*, leaves 3-lobed. 24. y.

IVA. Calyx 3-leaved : styles 2, long : seed naked, obtuse : receptacle hairy : ray 5-flowered. 49. 55.—*frutescens*, (highwater shrub) leaves lanceolate rough-dotted deep-serrate. 2. g.

ORDER V. POLYGAMIA SEGREGATA.

ELEPHANTOPUS. Common calyx 3-leaved, partial calyx 4-flowered : florets ligulate : receptacle naked : egret setaceous. 49. 55—*carolinianus*, (elephant foot) stem simple pilose, leaves narrowed at the base. 4. p. Southern states.

CLASS XIX. GYNANDRIA.

ORDER I. MONANDRIA—OR ORDER II. DIANDRIA.

Calyx 5-leaved coloured, (or corol 5-petalled.)

A. *With a spur under the lower lip.*

ORCHIS. Calyx ringent-like, the upper leaflets vaulted : lip dilated, spur long : anther terminal adnate. 7. 21—*spectabilis*, (scarlet orchis) lip of nectary emarginate, spur as long as germ, stem leafless. r.—*orbiculata*, (round-leaved orchis) lip entire, side-leaflets of calyx spreading, spur longer than germ. g.—*fimbriata*, lip 3-parted, divisions wedge-form fringed, spur longer than germ. 4. p. *psychodes*, lip 3-parted fringe-like, spur as long as germ. 4. y-g.—*ciliaris*, lip 3-parted lanceolate fringed, root-bulb undivided, spur long, 4. y.

LIMODORUM. Calyx somewhat spreading : lip spreading, elongated at the base into a spur : anther a terminal lid, caducous. 7. 21—*unifolium*, (limodore) has but one leaf. w.

SATYRIUM. Calyx ringent-like, upper leaflet vaulted : lip linear, parted or sub-entire : spur short, sub-inflated and somewhat 2-lobed : anther terminal, adnate. 7. 21—*bracteatum*, (satyrion) lip bifid at the apex, bract twice as long as the flower. g.

B. *Lower lip without a spur.*

NEOTTIA. Calyx ringent-like, the outer side leaflets united before about the inflated base of the lip: anther parallel to the acuminate style, affixed behind. 7. 21—*pubescens*, (ladies' traces) radical leaves ovate netted with white veins, scape and flowers hairy, spike oblong. 21. w.—*cernua*, root-bulbs branched, stem leafy sheathed, lip of nectary entire, spike spiral. 21. w.—*tortilis*, lip 3-lobed, middle division crenate, spike spiral, leaves radical-linear. w.—*aestivalis*, stem leafy.

EPIPACTIS. Calyx erect, spreading: anther a permanent lid: lip flat, pendulous, 2-cleft at the apex. 7. 21—*convallaroides*, (lily orchis) stem with 2 roundish cordate leaves, lip obtuse 2-lobed.

CYMBIDIUM. Calyx 4 or 5-leaved, erect or spreading: lip concave at the base, with a spreading border: anther a deciduous lid: pollen globose. 7. 21—*corallorhizon*, (coral root) lip oblong acute undivided, stem leafless, sheathed. y-w. Plant white—*odontorhizon*, lip ovate obtuse, stem leafless sheathed. w-p. Plant white—*pulchellum*, (grass-pink) radical leaf ensiform, lip erect with expanded border. 21. p.—*hyemale*, leaves radical 5-nerved, lip obovate with crenate margin. y-g.

MALAXIS. Calyx spreading, turned upside down by the twisting of the peduncle when the petals open: lip ascending, concave, spreading: anther a lid. 7. 21—*liliafolia* (marsh-twayblade) leaves 2-ovate-lanceolate, lip wedge-obovate pointed. 21. p-y.—*ophioglossoides*, leaf 1 heart-ovate, lip 2-cleft. 21. w.

ARETHUSA. Calyx somewhat ringent-like: leaflets somewhat converging: anther a permanent lid: pollen powdery-granulated. 7. 21—*bulbosa* (arethusa) leafless, 1-flowered, root globose. 21. p.—*ophioglossoides*, scape 1 or 2-flowered with 2 leaves, root fibrous. 21. p.

CLASS XIX. ORDER II, V AND VI. 99

ORDER II. DIANDRIA.

CYPRIPEDIUM. Calyx coloured, 4-leaved, spreading : lip inflated, hollow : style with a terminal lobe ; and a petal-like appendage on the upper side. 7. 21—*pubescens* (yellow ladies' slipper) stem leafy, style-lobe obtuse, shoe-form nectary shorter than calyx. 2. y.—*spectabile* (ladies' slipper) stem leafy, style-lobe obtuse, nectary longer than calyx. 2. p.—*humile*, stemless, leaves radical. 2. p.

ORDER V. PENTANDRIA.

ASCLEPIAS. Follicles 2 : nectaries 5, concave, containing a little horn : petals reflexed. 30. 47—STEMS SIMPLE, LEAVES OPPOSITE—*syriaca*, (milk-weed, or silk-weed) leaves lance-oblong sharp downy beneath, umbels downy. 2. w-p.—*quadrifolia*, four largest leaves near the middle of the stem. 2. w-r.—*purpurascens*, leaves ovate downy beneath, nectaries upside down, umbels erect. 2. p.—*obtusifolia*, leaves clasping round-obtuse oval-oblong. 2. p.—STEM SIMPLE, LEAVES WHORLED OR SCATTERED—*verticillata*, leaves mostly whorled narrow-linear. 2. y-w.—*tuberosa*, leaves scattered lance-oblong rough-haired. 2.—*incarnata*, stem branching, leaves lanceolate, hairy. 2. r.

CYNANCHUM. Calyx 5-toothed : corol wheel form : nectary cylindric, 5-toothed : follicles 2. 30. 47—*obliquum* (choak-dog) twining, leaves cordate, corymbs axillary. p.

ORDER VI. HEXANDRIA.

ARISTOLOCHIA. Calyx 0 : corol superior, 1-petalled, ligulate, inflated at the base : capsule 6-celled, many-seeded. 11. 23—*serpentaria* (birth-wort) stem zigzag, scaped, lips of corol lanceolate. 2.—

sipho, stem twining, peduncles bracted, limb of corol 3-cleft. h. y.

* *Arum* was formerly placed here, but is now removed to class *monoecia*.

CLASS XX. MONOECIA.

ORDER I. MONANDRIA.

FLUVIALIS. Staminate flowers—calyx 0 : corol 0 : anther sessile. Pistillate flowers—calyx 0 : corol 0 : style filiform : stigma 2-cleft : capsule 1-seeded. 15. 6. (Flowers axillary.)—*flexilis*, (river-nymph) leaves in sixes linear 2-toothed at the apex. ☺.—*fragilis*, leaves in threes or opposite prickly-toothed. ☺.

CHARA. Staminate flowers—calyx 0 : corol 0 : anther globose, sessile. Pistillate flowers—calyx 0 : corol 0 : style 0 : stigmas 5 : berry 1-celled, many-seeded. (Aquatics.) 15. 6—*vulgaris* (chara) branchlets terete, joints leafy, leaflets oblong-subulate—*foliosa*, the leaflets linear.

NAJAS.—Staminate flowers—calyx 2-lobed : corol 4-cleft : anthers sessile, cohering. Pistillate flowers—calyx 0 : corol 0 : style subulate : stigma 2 or 3-cleft : capsule 1 to 4-seeded. 15. 6—*canadensis* (water nymph) small filiform smooth, leaves narrow-linear.

ORDER II. DIANDRIA.

LEMNA. Staminate flowers—calyx 1-leafed : corol 0. Pistillate flowers—calyx 1-leafed : corol 0 : capsule 1-celled, 2-seeded. 54. 6—*minor* (duck-meat) leaves oval flat both sides cohering at their bases, root solitary—*polyrhiza*, leaves oval flat cohering 2 or 3 together, roots fascicled. Leaves greenish-purple ; appear like flaxseed, scattered upon the surface of stagnant waters, with the roots

growing immediately from the under surface of the leaves, and the flowers from their upper surfaces. Found in great abundance near Williams' College.

PODOSTEMUM. Staminate flowers—calyx 0: corol 0: stamens affixed to a pedicel. Pistillate flowers—calyx 0: corol 0: germ ovate: stigma 1, sessile: capsule 2-celled, 2-valved, many-seeded. 54.6—*ceratophyllum* (thread-foot) stem filiform floating, leaves pinnate, flowers axillary.

ORDER III. TRIANDRIA.

TYPHA. Ament cylindric. Staminate flowers—calyx obsolete, 3-leaved: corol 0. Pistillate flowers—below the staminate: calyx 0: corol 0: seed 1, pedicelled; the pedicels surrounded at the base with long hairs resembling egret. 3. 8—*latifolia* (cat-tail, or reed mace) staminate and pistillate spikes near or adjoining, leaves sub-ensiform. 24.—*angustifolia*, staminate and pistillate spikes remote, leaves half-cylindric. 24.

SPARGANIUM. Staminate flowers—ament roundish: calyx 3-leaved: corol 0. Pistillate flowers—calyx 3-leaved: corol 0: stigma 2-cleft: drupe juiceless, 1-seeded. 3. 8—*ramosum* (burr-reed) leaves 3-sided at the base, common peduncle branched. 24. g-w.—*simplex*, common peduncle simple. 24.

ZEA. Staminate flowers—calyx-glume 2-flowered, awnless: corol-glume awnless. Pistillate flowers—calyx-glume 2-valved: style 1, filiform, pendulous: seed solitary, immersed in an oblong receptacle. 4. 10—*mays* (Indian corn) leaves entire linear-lanceolate keeled. ☉.g. Var. *precox* (summer corn) small and ripens in the summer.

TRIPSACUM. Staminate flowers—calyx-glume 2-flowered, outer one staminate, inner one neutral: corol-glume membranaceous. Pistillate flowers—

calyx-glume 1-flowered, covered with a 1-leafed involucre perforated with hollows : corol-glume 2-valved : styles 2 : seed 1. 4. 10—*dactyloides* (sesame grass) spikes ternate. 4.

COIX. Staminate flowers—in remote spikes : calyx-glumes 2-flowered, awnless : corol-glume awnless. Pistillate flowers—calyx-glume 2-flowered : corol-glume awnless : style 2-parted : seed covered with the bone-like calyx. 4. 10—*lacryma* (Job's tear) culm branched, leaves wrinkled, seeds ovate.

CAREX. Aments imbricate (usually in cylindric spikes.) Staminate flowers—calyx-scales solitary : corol 0. Pistillate flowers—calyx-scales solitary : corol inflated, monopetalous, 2-toothed at the apex : stigmas 2 or 3 : nut 3-sided, inclosed in the permanent corol, which becomes an utriculus-like permanent aril. 3. 9—STIGMAS 2, STAMENS AND PISTILLS IN DISTINCT SPIKES—*coespitosa*† (bog sedge) pistillate spikes about in threes, lower one very short, aril longer than the obtuse scale—*crinita*, staminate spikes in pairs, pistillate spikes in fours, aril shorter than the awned scale—STIGMAS 2, SPIKES SEVERAL, ANDROGYNOUS, WITH STAMINATE FLORETS ABOVE—*stipata*, aril bi-cuspidate plano-convex nerved, culm very rough, spikelets oblong about in fives—*paniculata*, aril with ciliate-serrate margin, spikes paniced.—LIKE THE LAST, EXCEPT WITH PISTILLATE FLORETS ABOVE—*scirpoides*, spikelets about in fours, aril ciliate-serrate—*festucacea* (fescue sedge) spikelets about in eights, aril ciliate-serrate.—STIGMAS 3, SPIKES ANDROGYNOUS WITH STAMINATE FLORETS ABOVE—*pedunculata*,

† Fifty-five species of *Carex* have been examined and described in the Northern States. It is therefore very difficult to select the most common, in conformity with our plan.—We have inserted none but those found most common near Yale College by the author, and near Williams' College by Professor Dewey.

spikes about in fours, aril obovate 3-sided obtuse.—
 STIGMAS 3, STAMENS AND PISTILS ON DISTINCT
 SPIKES, STAMINATE ONES SOLITARY, PISTILLATE
 ONES SESSILE OR WITH INCLOSED PEDUNCLES—
varia, pistillate spikes short about in threes, aril
 shorter than the scale—*tentaculata*, pistillate spikes
 in threes, aril a little longer than the scale—*lupu-*
lina, pistillate spikes in threes, aril mucronate sev-
eral times longer than the scale—oligocarpa, pis-
tillate spikes in pairs, aril obovate beaked longer
than the scale—folliculata, pistillate spike sub-soli-
lary about 6-flowered.—LIKE THE LAST, EXCEPT
 WITH LONG PEDUNCLES AND LONG SHEATHS—
plantaginea (plantain sedge) pistillate spikes in
 fours, culm with leaf-pointed bracts, radical leaves
 broad 3-nerved—*granularis*, pistillate spikes in
 threes, aril nerved globular inflated sub-emargin-
 ate, scale lance-ovate—*conoidea*, pistillate spikes in
 pairs, aril oblong-conic obtuse equalling the awned
 scale.—STIGMAS 3, STAMINATE SPIKES MANY—
pellita, staminate spikes in pairs, aril bifid, shorter
 than the oblong awned scale—*lacustris*, staminate
 spikes in fours, aril 2-forked. A variety, *gigantea*,
 is very large—*vecicaria*, staminate spikes in threes,
 aril oblong inflated bi-cuspidate.

SCLERIA. Staminate flowers—calyx-glume 2 or
 6-valved, many flowered : corol-glumes awnless.
 Pistillate flowers—calyx like the staminate : corol
 0 : stigmas 1 to 3 : nut coloured sub-globose. 3. 9.
 —*verticillata* (whip-grass) flowers spiked, culm 3-
 sided glabrous, fruit globose.

COMPTONIA. Staminate flowers—ament cylin-
 dric with calyx-scales : corol 2-petalled : filaments
 2-forked. Pistillate flowers—spike or ament ovate,
 corol 6-petalled : styles 2 : nut ovate. 50, 99—*as-*
plenifolia (sweet-fern) leaves alternately pinnatifid
 hairy beneath. $\frac{1}{2}$. g.

SERPICULA. Staminate flowers—calyx 4-toothed : corol 4-petalled. Pistillate flowers—calyx 4-parted : nut tomentose. 15. 88—*verticillata* (little snake-weed) leaves whorled prickly serrate. w.

ERIOCAULON. Common calyx many-leaved : florets many in an imbricate head : corol 3 to 6-petalled : stamens higher than the germ : capsule 3-celled : seed 1, crowned with the corol. Central flowers staminate. 6. 13—*pellucidum* (pipe-wort) stem 6 or 7-angled, stem and root pellucid, leaves awl-form 5-nerved. Grows mostly under water—*decangulare*, stem 10-angled—*gnaphaloides*, culm sub-compressed.

ORDER IV. TETRANDRIA.

BOEHMERIA. Staminate flowers—calyx 4-parted : corol 0 : nectary 0. Pistillate flowers—calyx 0 : corol 0 : styles 2 : seed 1, compressed. (Flowers capitate.) 53. 98—*cylindrica* (round-head) leaves opposite glabrous. 2.—*lateriflora*, leaves alternate rough. 2.

URTICA. Staminate flowers—calyx 4-leaved : corol 0 : nectary central cyathiform. Pistillate flowers—calyx 2-leaved (2-valved :) corol 0 : seed 1, glossy. 53. 98—*dioica*, (nettle) leaves opposite cordate coarse-serrate, spike-panicked, dioecious. 2. g.—*urens*, leaves opposite oval 3 to 5-nerved, racemes simple. ☉. g.—*humila*, leaves opposite ovate, racemes 2-parted shortish sub-corymbed. ☉. —*procera*, leaves opposite cordate, petioles ciliate. 2.—*canadensis*, leaves alternate heart-ovate, aments branched 2-ranked erect. 2.—*whitlowi*, (Albany flax) leaves alternate heart-ovate 3-nerved, upper ones opposite, panicle forked, root tuberous. 2. About 6 feet high. Discovered near Albany by Mr. Charles Whitlow.

PARIETARIA. Polygamous. Perfect flowers—

calyx 4-cleft inferior: corol 0: stamens elastic: style 1: seed 1. Pistillate flowers—calyx 2-leaved: seed covered with the dried elongated calyx. 53. 98—*pensylvanica*, (pellitory) involucre longer than the flower, leaves lance-oblong with opaque dots. 2.

Morus. Staminate flowers—calyx 4-parted: corol 0. Pistillate flowers—calyx 4-leaved: corol 0: styles 2: calyx berried: seed 1. 53. 98—*alba*, (mulberry) leaves heart-oblique smooth. 2. w.—*rubra*, leaves cordate downy beneath. 2. w.

ALNUS. Staminate flowers—ament composed of wedge-form truncate 3-flowered receptacles: calyx a scale: corol 4-parted. Pistillate flowers—calyx 2-flowered scales: corol 0: seed compressed ovate wingless. 50. 99—*serrulata*, (alder) leaves obovate acuminate, stipules oval obtuse. 2. g.

Buxus. Staminate flowers—calyx 3-leaved: petals 2: germ a mere rudiment. Pistillate flowers—calyx 4-leaved: petals 3: styles 3: capsules 3-beaked, 3-celled: seeds 2. 38. 96—*sempervirens*, (box) leaves ovate. 2. Var. *angustifolia*, leaves lanceolate. Var. *suffruticosa*, small, leaves obovate.

ORDER V. PENTANDRIA.

XANTHIUM. Staminate flowers—common calyx imbricate: corol 5-cleft, funnel-form: receptacle chaffy. Pistillate flowers—involucre 2-leaved, 1-flowered: corol 0: drupe dry, muricate, 2-cleft: nut 2-celled—*strumarium*, (sea burdock) stem unarmed, leaves cordate 3-nerved, fruit an oval burr. —*orientale*, leaves 3 to 5-lobed.

AMBROSIA. Staminate flowers—common calyx 1-leaved: corol 1-petalled, 5-cleft, funnel-form: receptacle naked. Pistillate flowers—calyx 1-leaved, entire, the swelling part 5-toothed, 1-flowered: corol 0: nut from the indurated calyx, 1-seeded. 54.

32—*elator*, (common hogweed) leaves doubly-pinnate smoothish with ciliate petioles, racemes terminal paniced. ☹.—*artemisifolia*, branches fastigiate. ☹.—*trifida*, leaves 3-lobed, fruit 6-spined. ☹.

AMARANTHUS. Staminate flowers—calyx 3 or 5-leaved: corol 0: stamens 3 or 5. Pistillate flowers.—calyx and corol as the staminate: styles 3: capsule 1-celled, opening transversely: seed 1. 54. 30—*oleraceus*, (pot amaranth) glomerules axillary ramose, leaves rugose oblong very obtuse emarginate. ☹. g.—*hybridus*, leaves lance-ovate, racemes decompound crowded erect. ☹. g-p.—*hypochondriacus*, leaves lance-oblong mucronate. ☹. p.—*albus*, glomerules axillary, leaves obovate retuse, stem 4-sided. ☹.—*melancholicus*, (love-lies bleeding) glomerules axillary peduncled, leaves lance-ovate coloured. ☹. p. e.

ORDER VI. HEXANDRIA?

ZIZANIA. Staminate flowers—calyx 0: corol-glume 2-valved, awnless, with pistillate flowers intermixed. Pistillate flowers—calyx 0: corol-glume 2-valved, cuculate, awned: style 2-parted: seed 1 invested in the plaited corol. 4. 10—*clavulosa*, (water oats) panicles branching, pistillate flowers above, bract clavate.

ORDER XIII. POLYANDRIA.

MYRIOPHYLLUM. Staminate flowers—calyx 4-cleft: petals 4, caducous: stamens 4, 6 or 8. Pistillate flowers—calyx and corol like the staminate: pistils 4: style 0: seeds 4, having a bark. 15. 6—*spicatum*, (water millfoil) leaves all pinnate capillary, lower ones whorled, all under water. 24.

SAGITTARIA. Staminate flowers—calyx 3-leaved: corol 3-petalled: filaments mostly 24. Pistillate flowers—calyx and corol as in the staminate:

pistils many : capsules aggregate, 1-seeded. 5. 13
 —*sagittifolia*, (arrow-head) leaves lanceolate acuminate sagittate with strait lanceolate hind lobes. 2. w.

CALLA. Spathe ovate becoming expanded : spadix covered with the fructification : stamens intermixed. Staminate flowers—calyx and corol 0 : anthers sessile. Pistillate flowers—calyx and corol 0 : berries 1-celled crowned with the short style. 2. 7—*palustris*, (water arum) leaves cordate, spathe ovate. 2. w.

ARUM. Spathe cuculate : spadix not entirely covered with the fructification ; being more or less naked above, with pistillate flowers beneath and staminate in the middle ; (sometimes a few are staminate beneath :) berry mostly 1-seeded : generally cirrose-glandular beneath. 2. 7—*triphyllum*, (Indian turnip) leaves ternate, with ovate entire leaflets, naked part of spadix very long clavate. 2. p. y. g. Near Williams' college mostly dioecious. —*virginicum*, leaves heart-sagittate acute with obtusish hind lobes, naked part of spadix very short. In wet places.

POTERIUM. Staminate flowers—calyx 4-leaved : corol 4-parted : stamens 30 to 50. Pistillate flowers—calyx and corol like the staminate : pistils 2 : berry from the indurated tube of the corol. 54. 92 —*sanguisorba*, (burnet) stem sub-angled, filaments exsert. 2. e.

QUERCUS. Staminate flowers—calyx sub-5-cleft : stamens 5 to 10. Pistillate flowers—calyx 1-leaved, entire, scabrous, (a woody cup :) styles 2 to 5 : nut coriaceous, surrounded at the base by the permanent calyx. 2. 50. 99—LEAVES OBOVATE, TOOTHED —*montana*, (rock-oak, or chesnut oak) leaves nearly equal-toothed.—*bicolor*, (swamp oak) leaves unequally toothed with entire base.—

LEAVES LANCEOLATE TOOTHED.—*castanea*, (yellow oak) leaves acuminate.—LEAVES 3-LOBED AT THE END—*nigra*, (black jack) leaves wedge-form.—LEAVES SINUATE WITH MUCRONATE LOBES, OBLONG—*discolor*, (two-coloured oak) downy leaves.—*rubra*, (red-oak) leaves glabrous obtuse, with acutish lobes, calyx flat.—*coccinea*, (scarlet oak) leaves glabrous deep-sinuate, calyx with tapering base.—*palustris*, (pin oak) leaves glabrous deep-sinuate downy at the axils of the veins, calyx with flat-turbinate base.—DIFFER FROM THE LAST IN BEING OBOVATE.—*tinctoria*, (black oak) leaves pubescent beneath with obsoletely toothed lobes—*ilicifolia*, (scrub oak) leaves 3 to 5-lobed downy beneath.—LEAVES SINUATE WITH AWNLESS LOBES—*alba*, (white oak) leaves downy with entire obtuse lobes.

JUGLANS. Staminate flowers—ament imbricate : calyx a scale : corol 6-parted : filaments 4 to 18. Pistillate flowers—calyx 4-cleft superior : corol 4-cleft : styles 2 : drupe coriaceous or woody : nut sulcate. $\frac{1}{2}$. 50. 94—LEAFETS 7 OR UNDER, ACUMINATE.—*alba*, (hickory) leaflets scabrous pubescent beneath lanceolate, fruit sub-quadrangular.—*squamosa*, (shag-bark walnut) leaflets soft-pubescent lance-oblong, fruit ovate—*glabra*, (pignut) leaflets ovate glabrous with resinous dots beneath, fruit obcordate.—LEAFETS 9 OR OVER—*nigra*, (black walnut) leaflets lanceolate sub-pubescent, fruit globular.—*amara*, (bitter nut) leaflets lanceolate acuminate about 9, odd one sub-sessile, putamen thin.—*cinerea* (butter-nut) leaves lance oblong with soft pubescence and viscous petioles, fruit oblong.

FAGUS. Staminate flowers—ament roundish : calyx 5-cleft, bell-form : stamens about 12. Pistillate flowers—calyx 4-toothed, setose : germs 2 : nuts 2 inclosed in the calyx becoming coriaceous echinate. 50. 99—*ferruginea* (beach) leaves ovate

serrate acuminate pubescent beneath. $\frac{1}{2}$. g.w.—*sylvatica*, leaves glabrous obsoletely serrate. $\frac{1}{2}$.

CASTANEA. Polygamous. Staminate flowers—ament naked, linear : corol 5-petalled : stamens 10 to 20. Pistillate flowers—calyx 5 or 6-leaved, mucricate : germs 3 : stigmas pencil-form : nuts 3, with coriaceous putamen, inclosed in the calyx becoming echinate. 50. 9—*vesca-americana*, (chestnut) leaves lance-oblong glabrous, sinuate-serrate. $\frac{1}{2}$.

BETULA. Staminate flowers—ament imbricate, scales peltate 3-flowered : calyx a scale : stamens 10 to 12. Pistillate flowers—calyx a 2-flowered scale : seed 1, winged. 50. 99—*papyracea*, (canoe birch, or paper birch) leaves ovate acuminate doubly-serrate, veins hirsute beneath. $\frac{1}{2}$.—*populifolia*, (white birch, broom birch) leaves deltoid long acuminate very glabrous. $\frac{1}{2}$.—*lenta*, (black birch) leaves heart-ovate sharp-serrate acuminate, petioles and nerves hairy beneath. $\frac{1}{2}$. A variety, *lutea*, (yellow birch) bark yellowish.

CARPINUS. Ament imbricate. Staminate flowers—calyx-scales ciliate : stamens 10. Pistillate flowers—calyx-scales 2-flowered : corol 3-cleft : nut ovate sulcate. 50. 99—*americana*, (hornbeam) scales of the pistillate ament 3-parted with the intermediate division lance-ovate, leaves unequally serrate. $\frac{1}{2}$.

OSTRYA. Ament imbricate. Staminate flowers—calyx a scale : filaments ramose. Pistillate flowers—ament naked : capsules inflated, imbricate, with one seed at its base. 50. 99—*virginica*, (hop hornbeam) leaves oblong-ovate acuminate. $\frac{1}{2}$. g.

CORYLUS. Staminate flowers—ament imbricate : calyx a scale : stamens about 8. Pistillate flowers—calyx 2-parted, lacerated : styles 2 : nut ovate, surrounded by and included in the permanent leaf-

like calyx. 50. 99—*americana*, (common hazlenut) calyx of the fruit bell-form with a dilated border, leaves cordate acuminate. $\frac{1}{2}$. g.—*rostrata*, (beaked hazlenut) calyx of the fruit elongated into a tubular beak, leaves oblong-ovate. $\frac{1}{2}$. g.

PLATANUS. Ament globose. Staminate flowers—corol scarcely apparent, anthers growing around the filaments. Pistillate flowers—calyx many-leaved : style with a recurved stigma : seed roundish, crowned with the mucronate style, with egret-like hairs at the base. 50. 99—*occidentalis*, (buttonwood, or plane tree) leaves quinquangular pubescent. $\frac{1}{2}$. g.

LIQUIDAMBAR. Staminate flowers—ament conic, surrounded with a 4-leaved involucre : filaments numerous. Pistillate flowers—ament globose, surrounded with a 4-leaved involucre : calyx 1-leaved, pitcher-form, 2-flowered : styles 2 : capsules 2, surrounded at the base by the calyx, 1-celled, many-seeded. 51. 99—*styraciflua*, (sweetgum) leaves palmate-lobed with the axils of the veins hairy. $\frac{1}{2}$.

ORDER XVI. MONADELPHIA.

PINUS. Staminate flowers—calyx 4-leaved : stamens many : anthers naked. Pistillate flowers—calyxes in strobiles or cones, scales 2-flowered : pistil 1 : nut with a membranaceous wing. (Perhaps more properly a samara.) $\frac{1}{2}$. 51. 100—LEAVES EVERGREEN, 2 IN A FASCICLE.—*resinosa*, (yellow pine) cones not half as long as the leaves—SAME, WITH 3 LEAVES IN A FASCICLE.—*rigida*, (pitch-pine) spines on the scales reflexed—SAME, WITH 5 LEAVES IN A FASCICLE—*strobis*, (white pine) strobiles cylindric longer than leaves.—LEAVES DECIDUOUS FASCICLED—*pendula*, (black larch) strobile oblong—*microcarpa*, (hacmatack)

strobile roundish, few-flowered.—LEAVES SOLITARY, SCALES OF THE CONE SMOOTH AND TAPERING.—*balsamea*, (balsam fir) leaves flat emarginate.—*canadensis*, (hemlock tree) leaves flat denticulate two ranked.—*alba*, (single spruce) leaves 4-sided incurved, strobile sub-cylindric with obovate scales.—*nigra*, (double spruce) leaves 4-sided strait erect, strobile ovate with oval scales.

CUPRESSUS: Staminate flowers—ament imbricate: calyx a scale: corol 0: anthers 4, sessile. Pistillate flowers—ament strobilaceous: calyx a 1-flowered scale: corol 0: stigmas 2, with concave points: nut angled. 51. 100—*thyoides* (white cedar) branchlets compressed and covered with 4 imbricated rows of short leaflets, cones minute and angular. $\frac{1}{2}$.

THUJA. Staminate flowers—ament imbricate: calyx a scale: corol 0: anthers 4. Pistillate flowers—ament a strobile: calyx a 2-flowered scale: corol 0: nut 1, surrounded with a marginal wing. 51. 100—*occidentalis* (arbor vitae†) branches spreading, cones smooth with obtuse scales. $\frac{1}{2}$.

ACALYPHA. Staminate flowers—calyx 3 or 4-leaved: stamens 8 to 16. Pistillate flowers—calyx and corol like the staminate: styles 3, 2-cleft: capsule tricoccous, 3-celled. (Having large bracts.) 38. 95—*virginica*, (three seed mercury) leaves lance-oblong. ☺.

RICINUS. Staminate flowers—calyx 5-parted: stamens numerous. Pistillate flowers—calyx 3-parted: styles 3, 2-cleft: capsules echinate, 3-celled, 3-seeded. 38. 96—*communis* (palma-christi, or castor oil plant) leaves palmate peltate. ☺. e.

PHYLLANTHUS. Staminate flowers—calyx 5 or

† This tree is also called white cedar in Dr. Hosack's catalogue; to which and to Phelps' Calendar, we generally refer, as the standards for English names.

6-parted : filaments united in a column ; anthers 3 and generally several barren filaments. Pistillate flowers—calyx and corol like the staminate : nectary with a 12-angled margin : styles 3 : capsule tricocous. 38. 96—*obovata*, (leaf-flower) leaves obovate obtusish. ☹.

MOMORDICA. Staminate flowers—calyx 5-cleft : corol 5-parted : filaments 3. Pistillate flowers—style 3-cleft : berry gourd-like and bursting elastically : seeds compressed. 34. 97—*balsamina*, (balsam apple) leaves cut-palmate, fruit angular. ☹. e. —*echinata*, fruit setose-echinate, leaves heart-5-lobed. ☹.

SICYOS. Staminate flowers—calyx 5-toothed : corol 5-parted : filaments 3. Pistillate flowers—styles 3-cleft : berry gourd-like, 1-seeded. 34. 97—*angulata*, (single-seed cucumber) leaves angular. ☹. w.

CUCURBITA. Staminate flowers—calyx 5-toothed : corol 5-cleft : filaments 3. Pistillate flowers—calyx and corol like the staminate : pistil 3-cleft : pomaceous berry large, 3 to 5-celled : seeds thickened at the margin. 34. 97—*lagenaria*, (gourd) leaves cordate round-obtuse hairy, fruit clavate with a woody rind. e.—*verrucosa*, (warted squash) leaves cordate deeply 5-lobed with the middle lobe narrowed at its base, fruit clavate warty. e.—*melo-pheo*, (flat squash) leaves cordate obtuse sub-5-lobed, fruit depress-bossed. e.—*pheo*, (pumpkin) leaves cordate obtuse sub-5-lobed, fruit roundish or oblong smooth. e. Var. *potiro*, fruit depressed or flattened—*citrullus*, (water-melon) leaves 5-lobed, lobes sinuate-pinnatifid obtuse, fruit oval smooth. e.

CUCUMIS. Staminate flowers—calyx 5-toothed : corol 5-parted : filaments 3. Pistillate flowers—calyx and corol like the staminate : stigmas 3

thick, 2-parted : berry with sharpish seeds. 34. 97—*sativus*, (cucumber) angles of leaves strait, fruit oblong rough. ☼. y. e.—*melo*, (musk-melon) angles of leaves round, fruit torulose. e.

MELOTHRIA. Staminate flowers—calyx 5-toothed; corol bell-form : filaments 3. Pistillate flowers—style 1 : stigmas 3 : berry 3-celled, many-seeded. 34. 97—*pendula*, (creeping cucumber) leaves 5-lobed, peduncles 1-flowered. ☼. y.

CLASS XXI. DIOECIA.

ORDER II. DIANDRIA.

VALLISNERIA. Staminate flowers—spathe 2-parted : spadix covered with florets : perianth 3-parted. Pistillate flowers—spathe 2-cleft, 1-flowered : perianth 3-parted, superior : corol 3-petaled : capsule 1-celled, many-seeded. (Stamens 2 and 6) 1. 22—*americana*, (tape-grass) leaves linear, peduncles strait. 24.—*spiralis*, peduncle of the fruit spiral, leaves linear with tapering base.

SALIX. Staminate flowers—ament cylindric : calyx a scale, with a nectariferous gland at the base. Pistillate flowers—ament and calyx like the staminate : style 2-cleft : capsule 1-celled, 2 valved : seed with egret-like down. 2. 50. 99.—LEAVES SERRATE—*nigra*, (brittle-joint willow) leaves lanceolate acuminate glabrous with hairy petioles, staminate flowers 4-stamened and in perfection after the leaves appear.—*conifera*, (cone willow) leaves lance oblong remotely serrulate glabrous above and downy beneath, stipules lunate.—*eriocephala*, (swamp willow) twigs downy, leaves oblong-oval sub-retuse at base, aments downy.—*vitellina*, (yellow willow) leaves lance-ovate acute glabrous above—*lucida*, leaves glabrous oblong acuminate with glandular serratures, staminate flowers in perfec-

tion after leaves appear.—*babylonica*, (weeping willow) leaves glabrous lance-linear, branches pendant. e.—LEAVES ENTIRE—*tristis*, leaves lanceolate tapering to both ends, downy beneath—*repens*, (creeping willow) stem depressed, leaves lance-oval.

FRAXINUS. Perfect flowers—calyx 0, or 4-parted : corol 0, or 4-petalled : pistil 1 : samara 1-seeded with a lanceolate wing. Pistillate flowers on a distinct plant : calyx, corol, pistils same as staminate. h. 44. 37—*americana* (white ash) leaflets subovate, acuminate entire—*juglandifolia*, (walnut-leaved ash) leaflets ovate serrate.

ORDER III. TRIANDRIA.

FIGUS. Common receptacle fleshy enclosing the apetalous florets, either in the same or in a distinct individual. Staminate flowers—calyx 3-parted.—Pistillate flowers—calyx 5-parted : pistil 1, lateral : seed 1, covered with the closed permanent somewhat fleshy calyx. 53. 98—*carica*, (fig tree) leaves palmate about 3-lobed, fruit glabrous pear-form.

* Carex.

ORDER IV. TETRANDRIA.

HIPPOPHAE. Staminate flowers—calyx 2-parted : corol 0. Pistillate flowers—calyx and corol like the staminate : style 1 : berry 1-seeded. 16. 24—*canadensis*, (sea-buckthorn) leaves ovate.

MYRICA. Staminate flowers—ament oblong : calyx an ovate scale : corol 0. Pistillate flowers—calyx and corol like the staminate : styles 2 : drupe or berry 1-seeded. 50. 99—*cerifera*, (bay-berry) leaves lanceolate slightly toothed. h.—*gale*, (sweet gale) leaves lanceolate slightly serrate. h.

BROUSSONETIA. Staminate flowers—ament cylindric : calyx 4-parted. Pistillate flowers—ament

globose : calyx tubulous, 3 or 4-toothed : germ becoming fleshy, clavate, prominent : styles lateral : seed 1, covered by the calyx. 50. 99.—*papyrifera*, (paper mulberry) leaves lobate or undivided. $\frac{1}{2}$. e.

ORDER V. PENTANDRIA.

HAMILTONIA. Perfect flowers—calyx superior 5-cleft : corol 0 : nectary with a 5-toothed disk : stamens 5 : pistil 1 : fruit a drupe. Staminate flowers like the perfect, except in wanting the pistil—*oleifera*, (American oil-nut) leaves oblong, racemes spike-like hairy. $\frac{1}{2}$.

ZANTHOXYLUM. Staminate flowers—calyx 5-parted : corol 0 : stamens 3 to 5. Pistillate flowers—pistils 3 to 5 : capsules equal to the number of pistils, 1-seeded. 46. 94.—*fraxineum*, (prickly ash, or tooth-ache tree) leaves pinnate, leaflets ovate obscurely serrate, umbels axillary. $\frac{1}{2}$. Among a great number of these plants which I examined near Yale and Williams' Colleges, I have never been able to find a staminate flower.

SPINACIA. Staminate flowers—calyx 5-parted : corol 0. Pistillate flowers—styles 4 : seed 1, within the indurated calyx. 12. 29.—*oleracea*, (spinach) fruit sessile, unarmed or sessile. ☺. w. e.

ACNIDA. Staminate flowers—calyx 5-parted : corol 0. Pistillate flowers—calyx 3-parted : style 0 : stigmas 3, sessile : capsule 1-seeded. 53. 29.—*cannabina*, (water-hemp) leaves lanceolate, capsules slender acute-angled. ☼.—*ruscocarpa*, capsules obtuse-angled. ☺.

HUMULUS. Staminate flowers—calyx 5-leaved : corol 0. Pistillate flowers—calyx 1-leaved, entire, oblique, spreading : styles 2 : seed 1, within the leaf-like calyx : inflorescence strobile-form. 53. 98.—*lupulus*, (hop) stem twining dextrorsum

CANNABIS. Staminate flowers—calyx 5-parted.

116 CLASS XXI. ORDERS VI, VIII TO XIII.

Pistillate flowers—calyx 5-leaved, entire, gaping laterally : styles 2 : nut 2-valved, within the closed calyx. 53. 98—*sativa*, (hemp) stem hairy, leaves digitate, staminate flowers solitary. ☺.

NYSSA. Perfect flowers—calyx superior, 5-parted : corol 0 : pistil 1 : fruit a drupe. Staminate flowers—stamens 10. 12. 24—*biflora*, (tupelo tree, or pepperidge) leaves ovate-oblong entire, peduncle of perfect flowers 2-flowered. $\frac{1}{2}$.—*triflora*, (sour gum) leaves oval, peduncle about 3-flowered. $\frac{1}{2}$.

ORDER VI. HEXANDRIA.

SMILAX. Staminate flowers—calyx 5-leaved : corol 0. Pistillate flowers—calyx and corol like the staminate : styles 3 : berry 3-celled : seeds 2. 11. 12—*rotundifolia*, (green briar) stem prickly, leaves cordate acuminate 5 to 7-nerved, climbing. $\frac{1}{2}$. w-y —*peduncularis*, (Jacob's ladder) stem terete unarmed : leaves ovate acuminate 9-nerved, peduncles of fertile umbels longer than the leaves. $\frac{1}{2}$. g.—*herbacea*, stem and leaves unarmed, leaves 7-nerved, climbing with tendrils. $\frac{1}{2}$. w-y.—*sylvestrica*, (true sarsaparilla) stem prickly-terete, leaves lance-oblong 3-nerved mucronate.

DIOSCOREA. Staminate flowers—calyx 6-parted : corol 0. Pistillate flowers—styles 3 : capsule 3-celled, compressed : seed 2, membranaceous. (Leaves generally alternate.) 11. 12—*villosa*, (yam root) leaves downy beneath, cordate. $\frac{1}{2}$.

FROM ORDER VIII. OCTANDRIA, to ORDER XIII.

POLYANDRIA.

POPULUS. Staminate flowers—ament cylindric : calyx a torn scale : corol turbinate, oblique, entire. Pistillate flowers—ament, calyx and corol like the staminate : stigma 4-cleft : capsule 2-celled : seed

with egret-like hairs. (Leaves having a tremulous motion.) $\frac{1}{2}$. 50. 99—*tremuloides*, (white poplar) leaves heart-roundish abruptly acuminate serrulate-toothed hairy edges—*trepida*, (high poplar) leaves round-oval smooth both sides, unequally sinuate-toothed. (Young leaves downy.)—*angulata*, (balm of gilead) leaves cordate obtusely hook-toothed glabrous, branches with winged angles—*balsamifera*, (balsam poplar) leaves ovate close serrate whitish or rusty beneath, stipules gummy, buds resinous—*dilatata*, (lombardy poplar) leaves deltoid. e.

DROSYPYROS. Staminate flowers—calyx 4 to 6-cleft dilated : corol pitcher-form, 4 to 6 cleft : stamens 8, 16 or 29. Pistillate flowers—calyx and corol like the staminate : styles 4-cleft : berry 8 to 12-seeded. 18 41—*virginiana*, (date plumb) leaves ovate obtusish glabrous. $\frac{1}{2}$. w.

GLEDITSCHIA. Perfect flowers—calyx 4-cleft : corol 3-petalled : pistil 1 : capsule legume-like. Staminate flowers—calyx 3-leaved ; corol 3-petalled. Pistillate flowers—calyx 5-leaved : corol 5 petalled. 33. 93—*triacanthos*, (honey-locust) leaflets 10-paired, leaves doubly-pinnate. $\frac{1}{2}$. w.

DATISCA. Staminate flowers—calyx 5 leaved ; corol 0 : anthers sessile, about 15. Pistillate flowers—calyx superior 2-toothed : styles 3 : capsules 3-angled, 3-horned 1-celled, pervious. 54.—*hirta*, (false hemp) leaves pinnate, stem hirsute. $\frac{1}{2}$.

MENISPERMUM. Staminate flowers—calyx 2-leaved : petals 4 or 6 outer and 8 inner : stamens 16. Pistillate flowers—corol like the staminate : 8 barren stamens : germs 2 or 3 : berries paired, 1-seeded. 11. 77—*canadense*, (moonseed) stem twining, leaves peltate cordate round angular. $\frac{1}{2}$. w. —*virginicum*, leaves sub-peltate cordate lobed pubescent beneath $\frac{1}{2}$ w.

ORDER XVI. MONADELPHIA.

JUNIPERUS. Staminate flowers--ament ovate : calyx a scale : stamens 3. Pistillate flowers--calyx 3-parted : petals 3 : styles 3 : berry 3-seeded, consisting of the three unequal tubercles of the calyx. (Nut bony, 1-celled with balsamy glands at the base.) 51. 100--*virginiana*, (red cedar,) leaves united by their bases in threes. $\frac{1}{2}$.--*communis*, (juniper) leaves ternate (or three ranked) spreading mucronate longer than the berry--*sabina*, (savin) leaves opposite obtuse imbricate 4-ways. $\frac{1}{2}$.

TAXUS. Staminate flowers--calyx about 4-bud-leaves : corol 0 : stamens many, anthers peltate, 8-cleft. Pistillate flowers--style 0 : receptacle acorn-cupform ; nut ovate. 51. 100--*canadensis*, (yew) leaves linear pointing 2-ways, margin revolute. $\frac{1}{4}$.

POLYGAMOUS PLANTS.

Some authors still retain the class of Polygamia, but we, following Persoon, have distributed the genera belonging to this class as follows :--*Andropogon* to class 3, order 2. *Holcus* to 3, 2. *Parax* to 5, 2. *Atriplex* to 5, 2. *Celtis* to 5, 2. *Veratrum* to 6, 3. *Melanthium* to 6, 3. *Acer* to 8, 1. *Mimosa* to 16, 10. *Parietaria* to 20, 4. *Fraxinus* to 21, 2. *Nyssa* to 21, 5. *Gleditschia* to 21, 13.

CLASS XXII. CRYPTOGRAMIA.

ORDER I. FILICES.

Ferns are annulated, when each capsule has a kind of chain passing around it at about right angles with the suture. When the fruit is ripe the chain in straitening opens the capsule ; it being attached by its ends to two contiguous edges of it.

A. *With annulated capsules.*1. *Without involucre.*

ACROSTICHUM. Capsules numerous, covering the whole lower surface of the frond. (The fertile leaves differ in shape from the barren. This genus should be examined in the young state; for the scattered fruit of other genera, by becoming confluent when old, often cover the frond.) 55. 5—*aureum* (fork-fern) frond pinnate with alternate leaflets, fruit on the upper leaflets 2.

POLYPODIUM. Capsules disposed in round scattered dots, on various parts of the lower surface of the frond. 55. 5—*vulgare*, (polypod) frond pinnatifid with oblong obtuse sub-serrate lobes, root with chaffy scales—*incanum*, same, with lobes lanced entire—*virginianum*, root smooth—*connectile*, frond doubly-pinnate, ciliate, fruit-dots minute—*calcareum*, frond ternate and doubly-pinnate.

2. *With involucre.*

ONOCLEA. Fruit-dots indeterminate, capsules covering the whole lower surface of the frond: involucre formed by turning in or rolling back the margin of the leaf, which opens inwards, in maturity, towards the midrib. (The fertile leaves are contracted and narrower than the barren ones.) 55. 5—*sensibilis*, (sensitive polypod) barren frond pinnate, fertile one doubly-pinnate—*struthiopteris*, fronds doubly-pinnatifid, divisions roundish.

BLECHNUM. Capsules in uninterrupted lines running parallel to the midrib of the frond on both sides: involucre opens inwards.† (The fruit of

† The involucre opens *inwards*, when it opens or separates, so as to leave the capsules naked on the side next to the midrib.

this genus, when ripe, often covers the whole lower surface of the frond like the *acrostichum*; it must therefore be examined in the young state.) 55. 5—*borealis*, (Roman fern) barren frond pinnatifid, fertile one pinnate with acuminate leaflets—*serrulatum*, frond pinnate, leaflets serrate tapering to both ends.

PTERIS. Capsules arranged in a continued line along the very margin of the frond: involucre opening inwards. (When the leaves are extremely small, the rows of capsules on opposite sides meet and cover the lower surface like the *onoclea*.) 55. 5—*aquilina*, (common brake) leaflets pinnate with lanceolate repand-toothed divisions, upper ones smallest—*gracilis*, leaflets lanceolate obtuse alternate, lower ones pinnatifid—*caudata*, leaflets doubly-pinnate, subdivisions sub-linear—*atropurpurea*, frond doubly-pinnate, subdivisions sub-linear, lines of the capsules somewhat interrupted.

VITTARIA. Capsules in an uninterrupted line along the disk or margin of the frond: involucre double, one of which opens inwards, the other outwards. (Leaves always simple.) 55. 5—*lineata*, (ribbon fern) frond linear very long pendant.

ASPLENIUM. Capsules in lines parallel to each other, situated exactly *upon* the secondary veins of the frond: involucre opening inwards. (By the secondary veins is meant those of the middle part of the disk, not the larger ones at the margin or midrib. The parallel lines of capsules may stand obliquely with respect to the midrib, but their direction must be parallel to each other.) 55. 5—**FROND DOUBLY-PINNATE BELOW.**—*montanum*, (spleen wort) leaflets pinnatifid—*ruta-muraria*, frond only pinnate at top with obtuse leaflets.—**FROND PINNATE ONLY**—*thelypteroides*, leaflets deeply-pinnatifid with tooth-serrate divisions—*angustifolium*,

base of upper leaflets truncate, of lower ones rounded—*ebeneum*, leaflets serrulate, upper ones eared, lower ones cordate—*melanocaulon*, leaflets crenate with wedge-form base. FROND SIMPLE—*rhyzophyllum*, (walking-leaf) frond lanceolate with a rooting apex.

SCOLOPENDRIUM. Capsules in strait or zigzag parallel lines *between* the secondary veins (or ribs) of the frond: involucre double, opening on the top of the lines of capsules and folding down towards each side. (In the genus *asplenium*, the lines of capsules lie across the veins of the frond; but in this they are in line with the veins and attached along their sides or between them.)—*vulgare*, (caterpillar fern) capsules between 2 veins.

WOODWARDIA. Capsules in oblong or oval spots arranged in regular rows on both sides of the midrib: involucre vaulted and opening inwards. (When the leaves have large segments, the capsules are arranged along the midribs of the segments also.) 55. 5—*angustifolia*, (kidney-fruit fern) frond pinnate, segments linear acute entire, barren ones sub-serrate—*virginica*, segments pinnatifid.

ADIANTUM. Capsules disposed in oblong spots arranged along the margin of the frond: involucre is formed by turning back the margin of the frond over the capsules, and it opens inwards. (The lines of oblong spots are generally along that margin, which may be considered the end of the leaf or of the segments of the leaf.) 55. 5—*pedatum*, (maiden-hair) frond pedate, branches pinnate, leaflets halved.

ASPIDIUM. Capsules in scattered roundish spots on various parts of the whole lower surface of the frond: involucre a kidney-form or round membrane, fastened to the frond in or near the center of the fruit-dot, and opening on all sides. (The

involucre, when a little opened, is strictly peltate.)

55. 5. FROND TERNATE—*crucitarium*, (shield-fern) leaflets pinnatifid.—FROND PINNATE WITH UNDIVIDED LEAFLETS—*acrostichoides*, leaflets ciliate-serrate. FROND PINNATE WITH PINNATIFID LEAFLETS—*noveboracensis*, divisions of leaflets subentire ciliate obtusish—*cristatum*, divisions of leaflets tooth-serrate obtuse. FROND DOUBLY-PINNATE.—*felixmas*, leaflets serrate. Var. *erosum*, leaflets crose-serrate—*marginale*, leaflets crenate decurrent.

ATHYRIUM. (Taken from *aspidium*.) Capsules in scattered roundish or oblong spots on various parts of the whole lower surface of the frond: involucre a roundish membrane fastened to the frond at one side of the fruit-dot and opening on the other. (The involucre is generally fastened inwards and opens outwards towards the margin of the frond.) 55. 5. FROND PINNATE—*thelypteris*, (snuff-box fern) divisions of leaflets acute. FROND DOUBLY-PINNATE, LEAFLETS DOUBLY-SERRATE—*felix-femina*, fruit-dots strait-oblong—*asplenoides*, fruit-dots lunulate. SAME, WITH LEAFLETS SERRATE—*bulbiferum*, leaflets opposite, fruit-dots round. SAME, WITH LEAFLETS NOTCHED OR TOOTHED—*tenue*, leaflets decurrent, toothed—*rufidulum*, leaflets crenate with united bases, chaff-bristly beneath.

DICKSONIA. Capsules in small round scattered fruit-dots at the margin of the frond: involucre double; one part is formed of the thin margin of the frond turned over upon the fruit-dots, the other is from the frond inward side of the fruit-dots, each part opening opposite to where it is fastened to the frond. 55. 5—*pilosiuscula*, (fine-haired fern) frond doubly-pinnate, leaflets pinnatifid.

WOODSIA. Involucre perianth-form, with a hairy margin: capsules pedicelled included within the

involucre : fruit-dots roundish, scattered. 55. 5—*hyperbolea*, (calyxed fern) frond pinnate, leaflets 3-parted—*ilvensis*, frond doubly-pinnatifid, divisions oblong.

CHEILANTHES. Fruit-dots roundish, distinct, situated at the margin of the frond : involucre a roundish membrane formed by turning over the margin of the frond upon the fruit dots, and opening inwards. (The margin is always crenate, and each fruit-dot has its own involucre perfectly separate from the others.) 55. 5—*vestita*, (lip-fern) frond doubly-pinnate with pinnatifid leaflets, hairy both sides.

B. *With capsules not annulated.*

SCHIZAEA. Capsules top-form, striate longitudinally and radiately, situated upon the back part of a narrow spike-form appendage of the frond, surrounded with or interspersed among, bundles of hairs. (The appendages, bearing the capsules are generally digitate and occupy the summit of the frond.) 55. 5—*tortuosa*, (one-sided fern) frond simple, spikes one-way.

OSMUNDA. Capsules globose, pedicelled, radiate-striate or wrinkled, having a hinge at the joining of the two valves, which resembles part of the jointed ring of annulated ferns : the capsules either occupy the whole lower surface of the frond, or a panicle-raceme. (The parts of the frond occupied by the fruit are always more contracted than the barren parts.) 55. 5—*cinnamomea*, (flowering fern) frond doubly-pinnatifid, fertile ones distinct and panicle-racemed—*interrupta*, barren leaflets on the frond with the fertile ones, above and below and sometimes among them—*spectabilis*, frond doubly-pinnate, leaflets sharp-serrate—*regalis*, frond bipinnate, terminating in several racemes, very branching and without hairs.

LYGODIUM. Capsules radiate-striated or wrinkled, opening laterally, longitudinally or transversely ; they are situated upon spikelets which proceed from the margin of the frond, each capsule being hid under a scale which falls off frequently in ripening. 55. 5—*palmatum*, (fringed fern) leaves palmate.

APPENDIX TO THE ORDER FILICES.

PTEROIDES.

Plants related to the ferns in their general habit ; but in some degree approaching the habit of pines, umbelliferous and culminiferous plants. The young leaves are never spiral ; in which particular they differ from most of the proper ferns.

BOTRYCHIUM. Capsules coriaceous, globose, one-celled, smooth ; they are disposed in spikes or racemes, generally open lengthwise, sometimes irregularly. 55. 5 —FROND 3-PARTED, BIPINNATIFID—*gracile*, (grape-fern) divisions of the leaflets sub-pinnatifid and sub-dentate—*dissectum*, divisions 2-parted, 2-toothed at the apex—*virginicum*, divisions obtuse, sub-3-toothed.—SAME, BIPINNATE—*fumaroides*, leaflets lunate crenate.—SOMEWHAT DOUBLY-TERNATE—*obliquum*, leaflets serrulate, unequally cordate.

OPHIOGLOSSUM. Capsules round, 1-celled, opening transversely ; they are placed on a somewhat jointed spike in two close rows. 55. 5—*vulgatum*, (adder-tongue fern) frond ovate simple, spikes about an inch long.

PSILOTUM. Capsules globose, 3-celled, 3-seeded, opening upwards with three pores ; they are sessile on the branches and axillary. 55. 5—*dichotoma*, (naked fern) stem naked 3-sided forked.

LYCOPodium. Capsules mostly kidney-form or

roundish, 2 or 4-valved opening elastically; they are placed under separate scales in a spike, or sometimes in the axils of leaves. (Very leafy, their stems being generally covered with 2, 3 or 4 rows of narrow simple entire leaves.) 55. 5—*complanatum*, (club-moss, or ground pine) leaves acute 2-rowed united, spikes in pairs or in fours peduncled erect, stem creeping—*obscurum*, leaves scattered 6-rowed, shoots erect, branches radiately forked, spikes nearly sessile cylindric solitary terminal—*rupestre*, leaves scattered ending in a filament, spikes 4-sided sessile.

EQUISETUM. Fruit placed under peltate bodies, which are arranged in whorls forming a spike-form raceme; four spiral filaments surround the seed (probably) which resemble green globules. (Fertile plants mostly leafless, the stems of all are jointed with toothed sheaths at every joint, and usually longitudinally striated and hollow.) 55. 5—*hyemale*, (scouring rush) stem naked very rough, sometimes branched at the base, spike terminal—*arvense*, (field horsetail) fertile stem simple naked, sheaths broad sharp black distinct—*sylvaticum*, (woods horsetail) fertile stem with a few whorls of branches, teeth at the joints broad-pointed.

ORDER II. MUSCI.†

A. Capsules without a lid.

PHASCUM. Capsule furnished with calyptra, but

† So far the most common species of each genus have been given. Perceiving that the work is swelling beyond what was intended; nothing more will be given under the five remaining orders, than is absolutely necessary for studying the genera. Perhaps another edition may appear, which will include all the known species of plants in the Northern States. The manuscript was prepared last summer, under the immediate inspection of Professor Ives of Yale College; and it is now ascertained, that it would not extend this book beyond another hundred pages.

having no lid it falls off closed. (The smallest of mosses, never half an inch high, and more commonly not the eighth of an inch, and almost sessile.) 56. 4—*crispum*, (earth moss) having a stem, leaves lance-acuminate.

B. *Capsules with a lid and without a peristome.*

SPHAGNUM. Calyptré breaks off transversely, leaving the lower half on the capsule: lid caducous. (Found only in swamps. Becomes reddish when old.)—*latifolium*, (peat-moss) leaves ovate obtuse close-imbricate.

GYMNOSTOMUM. Calyptré wholly falling off: lid caducous—*pyriforme*, (toothless moss) leaves ovate acute spread, capsule pear-form, lid obtuse pointed.

C. *Capsule with a lid and furnished with a single peristome, proceeding from the outer surface of the capsule, or from both inner and outer.*

1. *Teeth fewer than 16.*

TETRAPHIS. Teeth 4, taking their origin from both the inner and outer surface of the capsule. 56. 4—*pellucida*, (four-toothed moss) nearly transparent in various parts.

SPLACHNUM. Teeth 8: capsule with an umbrella-form apophysis below its base. 56. 4—*umbellaceum*, (umbrella moss) apophysis blubber-like.

2. *Teeth always 16, and neither split, connected, nor in pairs.*

GRIMMIA. Calyptré smallish: peduncle terminal. 56. 4—*controversa*, (awl-cap moss) leaves lance-linear, serrate at top—*alpicola*, leaves obtusish, capsule obconic nearly sessile.

MASCHALOCARPUS. Calyptræ small : peduncle arillary : stem sarmentose. 56. 4—*julaceum*, (creeping moss) ascending, leaves ovate acute nearly as long as the peduncle.

3. *Teeth always 16, and split.*

DICRANUM. Each tooth split part of the way from the tip towards the base, incurved and solid. (Muhlenberg found 23 species in North America.) 56. 4—*bryoides*, (fork moss) leaves 2-rowed compressed, capsule terminal erect.

TRICHOSTOMUM. Each tooth split quite down to the base, erect and filiform. 56. 4—*pallidum*, (hair-mouth moss) stem simple short, leaves capillary and sheathing.

4. *Teeth 16, 32 or 64, connected.*

POLYTRICHUM. Tips of the teeth all meet in a flat membrane, which extends over most of the mouth of the capsule : calyptræ mostly composed of hair. 56. 4—*juniperinum*, (hair-cap moss) capsule square, leaves lance-linear with rough keels.

5. *Teeth 16, 32, or 64, in pairs.*

DIDYMODON. Capsule without any apophysis below its base. (The *splachnum*, having teeth sometimes in pairs, is best distinguished from this genus by its apophysis.) 56. 4—*lineare*, (double-tooth moss) leaves linear.

D. *Capsule with a lid, and furnished with a single peristome proceeding only from the inner surface of the capsule.*

BARBULA. Peristome consists of twisted filaments. 56. 4—*apiculata*, (spiral-tooth moss) stem short, leaves remotish lance-oblong.

DIPHASCUM. Teeth vein-like, lying on a conic plaited membrane ; capsule inflated almost sessile

upon the root. 56. 4—*foliosum*, (bladder mouth) leaves linear acuminate.

E. *Capsules with a lid, and furnished with a double peristome, the outer one consisting of 8 or 16 distinct teeth.*

1. *Inner peristome consisting of teeth or filaments not connected at their bases.*

ORTHOTRICHUM. Inner peristome consists of 8 or 16 fine hair-like filaments, vaulted inwards. 56. 4—*anomalum*, (curve-haired moss) branched, leaves lanceolate keeled obtusish, calyptrae hairy toothed base—*striatum*, leaves acute keeled spread, calyptrae entire.

NECKERA. Outer peristome consists of 16 teeth, the inner one of 16 filaments, erect; peduncles axillary. (Sarmentose.) 56. 4—*pinnata*, (strait-haired moss) decumbent branched, leaves 2-rowed, capsule immersed in the sheath—*macrospora*, peduncles long.

TIMMIA. Outer teeth very short; inner ones 16, long and membranaceous, in distinct pairs: peduncles terminal. 56. 4—*polystachoides*, (many-spiked moss) leaves lance-linear serrate spread, lid depressed in the centre.

CLIMACIUM. Inner peristome consists of 16 filaments, disposed in pairs; each pair is united at top and connected below by transverse fibres: peduncles axillary. 56. 4—*dendroides*, (tree moss) a projecting collar below the outer teeth.

2. *Inner peristome consisting of teeth or filaments connected towards the base by a membrane.*

MEesia. Inner peristome consisting of 16 reticulate flat teeth: peduncle terminal. 56. 4—*longisetia*, (net-tooth moss) having a very long awn.

LESKEA. Outer teeth long-acuminate; inner

peristome consists of a delicate membrane at the base, and upwards becoming uniform acuminate teeth: peduncle axillary. (Greatly resembles Hypnum, but the ciliae between the inner teeth of the hymenium will distinguish it, if a very high magnifier be used.)—*rostrata*, (goose-neck moss) having a long beak. (Muhlenberg found 16 species.)

BARTRAMIA. Inner peristome consists of a delicate membrane terminating in 16 acuminately divided teeth disposed in pairs: peduncles terminal, except *halleriana*. 56. 4—*arcuata*, (bow-moss) branched, leaves serrate striate. (Muhlenberg found 5 species.)

MNIUM. Inner peristome consists of a membrane terminating in pointed teeth which are much perforated with large holes compared with the size of the teeth, having between them fine hairs: peduncles terminal. 56. 4—*cuspidatum*, (pricked-tooth moss) holes through the teeth smallish. (Muhlenberg found 11 species.)

BRYUM. Inner peristome consists of a membrane terminating in pointed teeth not perforated, having between them very fine delicate hairs: peduncles terminal. 56. 4—*conciideum*, (thread moss) leaves entire spread, capsules erect pearform—*nutans*, leaves serrate at top, capsule pendant. (About 12 species have been found in North America.)

HYPNUM. Inner peristome consists of a membrane terminating in pointed teeth not perforated, having between them very fine hairs, to be seen with a good magnifier: peduncles axillary. 56. 4—*serpens*, (sleeping moss) creeping, leaves 1-nerved at bottom, entire. (Muhlenberg examined 38 species in North America.)

3. *Inner peristome consisting of a membrane, or of united filaments.*

FONTINALIS. Inner peristome consisting of a reticulate membrane with longitudinal fibres. 56. 4—*antefyretica*, (water moss) leaves of the sheath obtuse, stem branched—*capillacea*, leaves acute, peduncle long.

BUXBAUMIA. Outer teeth extremely short and truncate; inner peristome consists of 2 or more cylinders of filaments slightly connected together, the inner cylinder being the longest: capsule oblique: peduncle radical. 56. 4—*aphylla*, (leafless moss) capsule peduncled.

- F. *Capsule with a lid, and furnished with a double peristome, outer one consisting of 16 connected teeth.*

FUNARIA. Outer teeth oblique and connected at the tips: inner are 16 filaments lying flat: peduncles terminal. 56. 4—*hygrometrica*, (rope moss) leaves inflected, peduncle becomes twisted by drying.

ORDER III. HEPATICAE.†

JUNGERMANNIA. Capsules 4-valved with chain-like seed-dispersers, peduncled, arising from a bell-form calyx. (An apophysis adjoins the capsule, and it has a silvery filamentous peduncle, which often grows several inches in one night. The peduncle rises from a bell-form calyx, which is more permanent than the fruit. In this calyx the fruit lies concealed a while, at length it opens and discloses a small shining black globule, which rises on the silvery peduncle and bursts into 4

† The plants of this order have the fructification much like that of Mosses; but the frond or leafy part sometimes resembles that of Lichens.

valves.) 57. 3.—*forella*, (false moss) branches flowering in the middle, flowers sub-sessile, leaves obovate. (Muhlenberg found 27 species.)

MARCHANTIA. Capsules peduncled, bursting at their summits: seeds attached to elastic fibres: the capsules are placed beneath umbrella-like stars or cones. (It agrees with some species of *jungermannia* in external appearance, but it is of a much firmer texture. The frond is always leafy, lobed, furnished with a strong midrib and beset beneath with villous roots. The disk of the leaf consists of a beautiful green network.) 57. 3.—*polymorpha*, (brook liverwort) frond obtusely lobed. (In the spring some of this species send up ovate anthers or buds on pellucid filaments from the disk of the frond. Near the middle of the summer the umbrellas appear, bearing the fruit under the rays.)

ANTHOCEROS. Capsules horn-like, issuing from a calyx with toothed reflexed margin, covered at first with a brown villous caducous calyptra; afterwards splitting into valves and presenting the columella with the seeds attached: around the calyx, within the substance of the leaf, and in a proper involucre, are inclosed heaps of reddish minute anthers or buds. (The substance of the frond is made up of beautiful 6-sided cells, each of which is marked on the surface with a small protuberance.) 57. 3.—*levis*, (wax liverwort) frond flat, crenate—*punctatus*, frond sinuate-lobed obtuse.

RICCIA. Capsules sessile, globular, 1-celled, crowned with an appearance of withered anthers; they are lodged in the substance of the leaf, and to be discovered only by the darker colour of the place where situated. (Usually found with *Lemna* in ponds and stagnant waters.) 57. 3.—*fluitans*, (gaping-liverwort) fronds repeatedly forked, linear,

smooth, reticulate obtuse, cleft at tips—*natans*, frond obcordate flat with long compressed radicles.

ORDER IV. ALGAE.

FUCUS. Germs imbedded in the gelatinous substance of the frond, aggregate : seeds produced in clustered tubercles, which burst at their summits. 57. 2—*edulis*, (dying seaweed) frond a roundish short stem expanding into a wedge obovate obtuse succulent leaf. An excellent vermifuge. (See Doct. A. R. Griffin's inaugural dissertation, before the New-York college of physicians.)

ULVA. Frond membranaceous or gelatinous : fruit in semi-transparent vesicular membranes within the substance or under the general cuticle of the frond, either solitary or clustered. 57. 2—*purpurea*, (seaweed) lance-oblong, flat, margin wavy entire.

CONFERVA. Consisting of herbaceous tubes or fibres, generally separated within by transverse partitions : seeds scattered through the joints, or contained in solitary closed tubercles attached to the tubes or fibres. 57. 2—*nitida*, (green-hair, frog's spittle) filaments simple lubricous shining, joints cylindric—*fluviatilis*, (brook green-hair) filaments branched alternately.

ORDER V. LICHÈNES.†

A. *Receptacle none ; propagæ naked, scattered or aggregate.*

LEPRARIA. Efflorescence sub-globular, scattered loosely over a crustaceous base, which it often

† This order is wholly copied from the system of Acharius, translated by Doct. Smith. Acharius has since subdivided *Parmelia*, *Baemyces*, &c. by giving generic names to the sections of species. Sprengel says, these three first genera are merely the first rudiments of other genera, and should be rejected.

covers entirely : frond crustaceous, indeterminate. 57. 2—*chlorina*, (leprous-like lichen*) greenish yellow or dark deep yellow, thick, effuse.

SPILOMA. Efflorescence in shapeless superficial masses, woolly and powdery, rigid ; frond crustaceous mostly indeterminate, but sometimes bordered, thin and uniform. 57. 2—*melanopia*, (efflorescent lichen) blackish flat sub-confluent.

B. Receptacles† composed of a peculiar compact hardish substance, not in any manner formed out of the frond, from which it differs in colour, being often black.

1. *Receptacle open.*

VARIOLARIA. Receptacles seated on a thick tartarous crust, which supplies them with an accessory border ; their disk is occupied with an assemblage of powdery substance : the frond is generally determinate. This genus was supposed to have no receptacle, until Dr. Smith detected the error. 57. 2—*faginea*, (small-pox lichen) frond leprous thin glabrous grey, receptacles white.

OPEGRAPHIA. Clefts black, sessile, oblong or linear, simple, confluent or branched, strait or zig-

* Young botanists who have not been informed to what department of nature the word *lichen* applies, may be told, that the following substances are lichens. The spots on rocks and stones which are white, yellow, black, &c. sprinkled over with dots resembling fly-dirt upon window-glass. Also the whitish green patches on old fences, trees, &c. and the substance on trees of a fibrous structure and firm texture, usually called moss. It differs from moss in being more tough and hard, and generally less green.

† As the student will find nothing on lichens like those organs denominated the fructification of phenogamous plants, he may be told that by receptacles are here meant those specks or dots mentioned in the last note, or those saucer-form substances on the large greenish patches on fences.

zag, bordered : their disk flat or slightly concave, naked or powdery, narrow, linear, rarely dilated : their border is of their own substance, often very narrow and scarcely perceptible, sometimes tumid, elevated, and sometimes inflexed : frond crustaceous, uniform, thin, generally indeterminate, occasionally leprous. 57. 2—*scripta*, (lettered lichen) clefts zigzag.

LECIDEA. Spangles sessile, with a flattish or convex disk : frond various, crustaceous ; uniform and limited, scattered and indeterminate, leafy, membranous, or stellate. 57. 2—*immersa*, (spangled lichen) greenish white, spangles black.

CALICIUM. Puffs turbinate, lenticular, or nearly globose : generally elevated on a rigid simple stalk of a different substance from the crust : frond crustaceous, leprous or tartarous, uniform or scattered, powdery and granulated or solid and chequered, or somewhat leafy and imbricated. This genus was confounded with the *fungi*, till distinguished by Persoon. 57. 2—*strigonellum*, (fungus lichen) crust none.

2. Receptacles closed, at length opening.

GYROPHORA. Buttons superficial flattish : frond leafy, peltate, between membranous and leafy. 57. 2—*vellea*, (button lichen) brownish grey, peltate.

BATHELIUM. Receptacles sessile, sub-globose, opening by a deciduous lid, hollow, from 1 to 3 cells lined with seeds : frond crustaceous, indeterminate, uniform.

VERRUCARIA. Tubercles elevated, discharging their chained seeds by a terminal pore, or else they fall out entire : frond thin crustaceous, uniform. Very minute. 57. 2—*nitida*, (mite lichen) pale green, tubercles crowded.

ENDOCARPON. Hollows hidden in the substance

of the frond, each opening by a little mouth : seeds enclosed in cells : frond membranous, somewhat crustaceous, of a determinate figure ; so united to the substance of the receptacles as to appear of a piece, excepting a little difference of colour. 57. 2—*miniatum*, (hidden lichen) peltate, pale, with spread-lobes.

C. *Receptacles formed of the frond itself, with which it agrees in substance and colour : seeds (excepting of the sphaerophoron) enclosed in proper cells.*

1. *Receptacles compound, either pierced or gaping.*

THELOTREMA. Receptacles compound ; the outer ones wart-like, elevated, of the substance of the crust ; inner ones somewhat globular, with a concave disk : frond a firm, continued, indeterminate crust. 57. 2—*pertusus*, (crust lichen) warts hemispheric with 1 or 2 pores.

2. *Receptacles nearly globular, closed ; at length bursting.*

SPHAEROPHORON. Cellules nearly globose, each enclosing a roundish ball of naked compact seeds, which turns to black powder, and is discharged by the torn orifice, leaving the cellule hollow and empty : frond shrubby, branched, solid, rigid, tartarous or minutely fibrous within ; with a smooth cartilaginous coat. A very elegant genus resembling corol. 57. 2—*globiferus*, (seed-ball lichen) shrubby branched cylindric brownish smooth.

ISIDIUM. Receptacle of the seeds terminal, sub-discoid, solid, various in thickness, covered with, and shining through, the crust of the papillae of the frond, which at length bursts, and each receptacle appears coloured and partly exposed : globules also either terminate each papilla or are nearly ses-

sile on the crust itself ; which are coloured and finally fall out, leaving pits at the summits of the branches : frond crustaceous, leprous and tartarous, cracked, rather indeterminate ; either papillary only, or throwing up solid branches. Resembles sphaerophoron ; but differs in having a base, terminal globules, &c. 57. 2—*corallinus*, (coral lichen) warty-branched, tartarous, grey.

3. *Receptacles orbicular, open ; their border of the colour of the frond, surrounding a variously-coloured disk.*

URCEOLARIA. Shields or spangles cup-form, variously coloured, sunk into the substance of the crust, or of its fragments or warts : disk concave, rarely becoming flattish by age, but never elevated above the crust : proper border often scarcely manifest, of the colour of the disk ; the accessory border sometimes formed of the crust, elevated like a ring surrounding the disk of each shield : frond crustaceous, tartarous, uniform, determinate, chequered or cracked, rarely figured or lobate. Often found on stones, &c. and some species are inseparable from the stones on which they grow. 57. 2—*bryophilla*, (pitcher-shield lichen) greyish with glaucous-black shields.

PARMELIA. Shields superficial or elevated, thick or sub-membranous, flattish, convex, or concave, crowned with a free accessory border : frond various, crustaceous, leafy, branched or laciniated, cartilaginous, membranous or gelatinous. A vast genus. One of its best characters is, that the shield has no border of its own substance ; but always has an accessory one of the substance of the crust. 57. 2—*herbacea*, (shield lichen) bright green with fulvous shields.

4. *Receptacles flattened, nearly destitute of a border; their upper side entirely covered with a thin seed-bearing disk, of considerable solidity at the surface.*

STICTA. Shields on the upper side of the frond, sessile, close-pressed, orbicular, membranaceous; their disk flat, rarely somewhat convex; their border accessory, thin, entire, free, slightly-tumid, rarely fringed, of the colour of the frond; pits among the down of the under side, scattered, sessile, minute, coloured: their disk roundish powdery; border elevated, a little inflated, entire or jagged, sometimes obliterated: frond leafy, membranous, or in some measure leathery, lobed or jagged, downy or shaggy beneath. The pits on the back of the frond form the best of its characters. 57. 2—*sylvatica*, (pit-back lichen) glaucous-brown, shields marginal brown.

PELTIDEA. Targets closely attached to the frond about the margin on the upper or under side, rarely lateral or towards the middle, each consisting entirely of a flattish (rarely concave) coloured disk: border accessory, very thin and scarcely discernible, united with the frond and of the same colour: frond rather leathery, with downy veins and fibres beneath, rarely naked; the circumference lobed, its barren lobes depressed, fertile ones elongated, ascending, naked at the base. Best distinguished from the sticta by having prominent veins or ribs underneath, and no pits. 57. 2—*venosa*, (target lichen) grey with divergent lobes, targets round brown.

CETRARIA, targets shield-like, thickish, flat, close-pressed, sessile, near the margin; their circumference loose, rounded, deformed or wavy, disk coloured, slightly convex: border accessory,

very narrow, entire or crenate, of the colour of the frond : frond leafy, membranous or sub-cartilaginous, rigid, smooth and naked on both sides ; sometimes cellular or pitted ; lobed and jagged, often crisped at the edges. The receptacles are rather between shields and targets ; well distinguished from *Peltidea* by its smooth, polished, membranous, sub-rigid frond. 57. 2—*islandica*, (iceland lichen) chesnut-greenish, ciliate-prickly.

CORNICULARIA. Orbs shield-like, terminal, peltate, thickish, cartilaginous, orbicular, flat ; at length rather convex, uneven, irregular ; disk generally of the colour of the frond ; border scarcely any, except in a young state a straight accessory one, entire, naked, or radiated, at length reflexed : frond cartilaginous, rigid, smooth, rather solid, spongy within, of a shrubby tufted branched habit, the branches acute. Resembles the *Parmelia* in the frond and the *Usnea* in the fruit. 57. 2—*tristis*, (horned lichen) brown, branches cylindric—*muricata*, horns lateral and terminal.

USNEA. Orbs sub-coriaceous, flattened, peltate, naked and smooth on both sides, mostly much dilated ; disk first concave, then flat, even, subsequently rather convex and cracked, or warty, scarcely coloured ; border either none or accessory, which is entire or toothed in the circumference, very often radiated : knobs on the same, or on a different plant, which are sessile, lateral, scattered ; at first shield-like and sometimes in a manner bordered, finally convex and warty, coloured. This is the filamentous lichen, tapering, more or less jointed, having a central elastic medullary thread. It is sometimes called tree-moss. 57. 2—*plicata*, (filamentous lichen, or tree-moss) pendant, palish white, orbs greenish white.

5. *Receptacles convex, more or less globose, clothed with a seed-bearing layer, or disk, sessile on the branches, papillary processes, or peculiar stalks of the frond ; terminal and permanent.*

STEREOCAULON. Knobs sub-turbinate, at first furnished with a proper border, then globose, without stalks, simple or clustered, coloured, permanent; disk at first flat and small, but gradually occupying the whole; the border of the same uninterrupted substance and colour, entire, at length obliterated: frond solid, almost woody, caulescent, erect, branched, mostly clothed with scales, rough and fibrous. 57. 2—*ramulosus*, (knobbed lichen) fibrous rough shrubby scale, knobs dark brown.

BAEMYCES. Knobs capitate, nearly globose, with reflexed and scarcely bordered edges, terminating their own proper fruit-stalks, simple or clustered, coloured, permanent; disk properly none, the whole globose surface being covered with the thin, solid, seed-bearing coat; border none: frond either subcrustaceous, softish, granulated, indeterminate, rarely figured; or consisting of a cartilaginous leafy and lobed crust: fruit-stalks elongated out of the very substance of the frond, simple or branched, tubular or nearly solid, dilated or tapering upwards, sometimes barren. 57. 2—*cocciferus*, (scarlet-mouth lichen) stem and cup greenish grey, knobs scarlet, sessile on the edges of the cup.

ORDER VI. FUNGI:

AGARICUS. Fungus with gills underneath. 58
1—*campestris*, (eatable mushroom) gills pink-colour, stem white, with volva.

MERULIUS. Fungus with veins underneath. 58.
1—*cornucopoides*, (veined fungus) stem grooved, pileus dull-yellow.

BOLETUS. Fungus with pores underneath. 58. 1—*igniarius*, (touch-wood) form of a horse's hoof.

THAELAEOPHORA. Fungus warty underneath, the substance corky. 58. 1—*caryophyllea*, (pink fungus) brown with radiate lines and white edge.

HYDNUM. Fungus prickly underneath. 58. 1—*chrysorhizum*, (paper punk) membranaceous flat spreading stemless, root yellow filiform, extending along the grains of decaying timber. Torrey.

MORELLUS. Fungus reticulate or cellular above, smooth underneath. 58. 1—*esculentus*, (morel) without volva, cellular outside, margin attached to stem.

HELVELLA. Fungus turbinate, plaited, wrinkled, inflated, deformed or concave, smooth, elastically ejecting seeds from the upper surface. 58. 1—*calyciformis*, (smooth-cup fungus) ochre, glabrous, scurfy, stem short.

CLAVARIA. Fungus cup-form, erect, elongated, simple or branched: seeds dispersed over the whole surface, or collected in tubercles opening at top. 58. 1—*cornea*, (club fungus) red-orange, simple or cloven.

CLATHRUS. Fungus roundish, cancellated with fleshy branches interwoven with each other. 58. 1—*cancellatus*, (latticed fungus) pilens open lenticled.

PEZIZA. Fungus concave above; hemispherical or bell-form; seeds contained in the cup. 58. 1—*coccinea*, (dish fungus) scarlet within, buff without.

CYATHUS. Fungus bell-form or cylindric, bearing lentiform capsules within. 58. 1—*striatus*, (bird's nest fungus) dark brown, villous.

LYCOPERDON. Fungus becoming powdery and fibrous within: seeds attached internally to the fibres. 58. 1—*bovistum*, (puff-ball) white becoming blackish, spherical.

FULIGO. Fungus with a cellular-fibrous bark; the fibres penetrating in a reticulate manner through a fibrous mass. 58. 1—*flava*, (soot fungus) yellow.

STEMONITIS. Fungus covered with a fugaceous or membranaceous bark, filled with seminiferous fibres elastically expanding themselves. 58. 1—*fascicularis*, (brittle-bark puff-ball) steel-blue, head sub-turbinate, stem very short.

AECIDIUM. Fungus furnished with membraneous cases, glabrous on both sides, filled with naked seeds not cohering 58. 1—*cornutum*, (cased fungus) yellow, cases long curved olive grey.

SPHAERIA. Fungus furnished with cases filled with roundish naked gelatinous seeds. 58. 1—*mori*, (globule fungus) clustered scarlet small.

SCLEROTIUM. Fungus quite simple, globular-oblong, tough, hardish, gaping a little at length in the center, covered with an inseparable bark never opening above. 58. 1—*semen*, (barked fungus) sub-globular, blackish, rugged.

UREDIO. Fungus parasitical, consisting of a mealy powder, destitute of a case, growing from under the cuticles of leaves and stems, bursting at last, with an even margin. 58. 1—*frumenti*, (blight, or grain-rust) linear oblong, black-brown, growing from under the cuticle of culms—*flava*, (yellow rust) sub-globular yellow, growing from under the cuticle of leaves.

TUBERCULARIA. Fungus gelatinous: cup tubercled: stalk thick, filled, closely appressed, bearing the seeds on the upper surface. 58. 1—*vulgaris*, (tubercled fungus) convex rugged with a sub-repand-tooth margin.

MUCOR. Fungus fugacious, heads at first semi-transparent, then becoming opaque, fixed to simple or branched stalks. 58. 1—*mucedo*, (common mould) globular, stem simple grey.

MONILA. Consisting of moniliform filaments clustered into a head. 58. 1—*coespitosa*, (bead-fungus) branched with ternate spikes.

XYLOSTROMA. Fungus leathery, expanded, deformed, penetrating, smooth, even : seeds among the fibres, globular minute. 58. 1—*giganteum*, (leather punk, or oak leather) fibres parallel, the whole fungus filling the interstices between the cleavages of decaying wood.

FINIS.

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ERRATA.

THE Address. For "Mason Fussell," read *Fris-sell*.

The Preface. For "Turton and Linneus," read *Turton's Linneus*.

On the 5th page, for "generic nouns," read *generic names*.

Correct the following by the help of the Index :

AGAVE. For "*virginca*," read *virginica*.

ALISMA. Over this genus erase "*POLYANDRIA*," and insert *POLYGYNIA*.

ANCHUSA. For $\frac{1}{2}$ read $\frac{1}{4}$.

ANDROPOGON. For "stainate," read *staminate*.

ATRIPLEX. Erase "(stem woody)" and insert (*stems woody*) over the genus *Ulmus*, as in page 26.

BROMUS *secalinus*. Read *calyx awnless*, &c.

CARUM. In the asterisked genera following this genus, set a period after *Scleranthus*.

CELASTRUS. For "climbing," read *twining*.

CITRUS, Var. *limon*. For "(lemon)" read (*lime*.)

CLAVARIA. For "cup-form," read *club-form*.

CORNUS *alba*. For $\frac{1}{4}$ read $\frac{1}{2}$. Over this genus insert, D. *Flowers 4-petalled, superior*.

DACTYLIS. This genus must be considered as following *Sorghum* on the next page.

DODECANTHEON. Read *DODECATHEON*.

ELYMUS. Strike out the words "4-leaved, 2-flowered" and "ternate."

GRATIOLA. For "Calyx 7-leaved, the 2 outer ones spreading:" read, *Calyx 5-leaved, sometimes with a 2-leaved calycle*.

INULA. For "*halenium*," read *helenium*.

LEPTANTHUS. Erase "3. 1." at the end of the generic description.

LONICERA *dioica*. For $\mathcal{L}$ read h .

MAGNOLIA. For $\mathcal{L}$ read h .

MARRUBIUM. Read MARRUBIUM.

PYXIDANTHERA. For h read $\mathcal{L}$.

RUBUS. For "juices," read *juicy*.

SMYRNIUM. In both species for h read $\mathcal{L}$.

SPIRAEA. For "(hand-hack)" read (*hard-hack*.)

THLASPI. For "roundish-cordate," read *roundish-obcordate*.

TRIFOLIUM. Read 1 to 4-seeded. And for "repens" read *repens*.

VERONICA. For h read $\mathcal{L}$.

ZAPANIA. In the section placed over this genus, for "Leaves," read *Calyxes*.

The reader will not be surprised at this list of errors, when he is told, that the author resides 34 miles from the printer, and never saw any of the proof sheets.

The alterations in the characters of the genera, *Elymus* and *Gratiola*, were caused by a perusal of the first numbers of that incomparable work, Elliot's Botany of South Carolina and Georgia.





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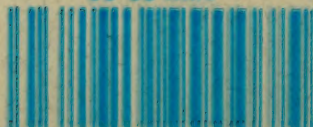


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